Physics Department Self-study
October, 2017

Appendices

A. REPORT TO THE GRADUATE SCHOOL

Executive Summary

The primary missions of the Physics Department are teaching and research. The education of graduate students involves both teaching **and** research. Consequently our graduate program includes advance course work and, especially, research at the frontier of physics. Our faculty are dedicated to providing the best graduate education possible.

Our department is one of the largest in the U.S. in terms of Ph.D. degrees awarded. This is accomplished by a high caliber faculty currently consisting of 48 faculty members. Additional members of our Graduate Studies Committee from other departments may also supervise graduate student research.

The Department of Physics offers three graduate degrees: a Master of Arts (M.A.) in Physics, a Master of Science (M.S.) in Applied Physics, and a Ph.D. in Physics. Our main program is the Ph.D. program.

This report provides a detailed discussion of our program. It provides information that will help the College of Natural Sciences assess the program and to help improve it. It provides information to the Graduate School that meet the requirements of the Texas Educational Coordinating Board requirements for periodic review.

A. Narrative Description

The Department of Physics offers three graduate degrees: a Master of Arts (M.A.) in Physics, a Master of Science (M.S.) in Applied Physics, and a Ph.D. in Physics. Our primary mission is the Ph.D. program. The Department has 203 graduate students; among them only two are seeking a terminal master's degree. Some Ph.D. students receive an M.A. degree while pursuing the Ph.D.

The Department only offers financial support to students seeking the Ph.D. degree; this support takes the form of a Teaching Assistantship (TA), Graduate Research Assistantship (GRA), or fellowship.

As the above enrollment figures indicate, the graduate program is large. According to the most recent American Institute of Physics report on the subject, of the 201 U.S. institutions that offer a Ph.D. in Physics, our program ranks among the largest, each of which has more than 200 graduate students. Our graduate program is #3 by doctoral degrees granted in 2014–15 (36) and #7 by total graduate enrollment in Fall 2015 (205). The seven-year (2011–2017) total of doctoral degrees awarded was 208 for an average of 29.7 per year.

Immediately after graduation, more than half of our Ph.D. graduates continue their research work in postdoctoral positions at research universities or other research institutions. About a quarter go to industry. Among 274 (2005–2013) graduates we could trace, 28 (10%) are now professors at research universities/research institutions.

(a) Graduate Degree Requirements

Master of Arts

The M.A. degree requires 30 hours of credit, including six hours of thesis. Of the remaining 24 hours, 18 credit hours must be in physics and at least six hours must be in supporting work outside of physics. All requirements must be completed within a six-year period. The M.A. degree is not required of Ph.D. candidates, but a few students earn the M.A. degree while pursuing the Ph.D.

Master of Science in Applied Physics

The program was introduced in 1995 and is designed to provide students with a broad background of graduate-level courses in physics and related fields with an emphasis on those aspects of science most used in an industry setting. The requirements are 30 hours of credit, six of which are obtained by preparation of the required thesis. The course work must include graduate level physics courses in experimental physics, quantum mechanics, classical electrodynamics, the physics of sensors and a technical seminar. Supporting work must be chosen from courses in engineering, chemistry, or geological science.

Doctor of Philosophy

There are three steps in the program leading to the Ph.D. degree. The first is the qualifying process. Prior to being admitted to candidacy for the Ph.D. degree, the student must:

1. Take the four "core" courses, i.e., quantum mechanics, electricity and magnetism, classical mechanics, and statistical mechanics, with a grade-point average of B+ (3.33).

2. Show evidence of exposure to modern methods of experimental physics through participation in an experimental research program or by taking the graduate course in experimental physics.

3. Present a seminar, within 27 months after entering the program, on a proposed research topic, followed by an oral examination.

After satisfying the three requirements listed above the student prepares a "program of work" for the Ph.D. degree. This program of work lists the courses the student has completed and those that will be taken to satisfy the requirements for the Ph.D. The doctoral degree must include at least four advanced physics courses (with a letter grade of at least B-), at least one of which must be in a specialty other than that of the student's dissertation. The Program of Work must include three courses outside the student's area of specialization. One of these must be an advanced physics course; another must be outside the Department of Physics; the third may be either outside the area of specialization or a course outside the Department of Physics. The Program of Work must be approved by the Graduate Advisor in the Physics department. Following this approval, the student is admitted to candidacy for the Ph.D. degree. For clarification, see Table I, below.

Table I: Model Course of Study for a Condensed Matter Experimentalist.

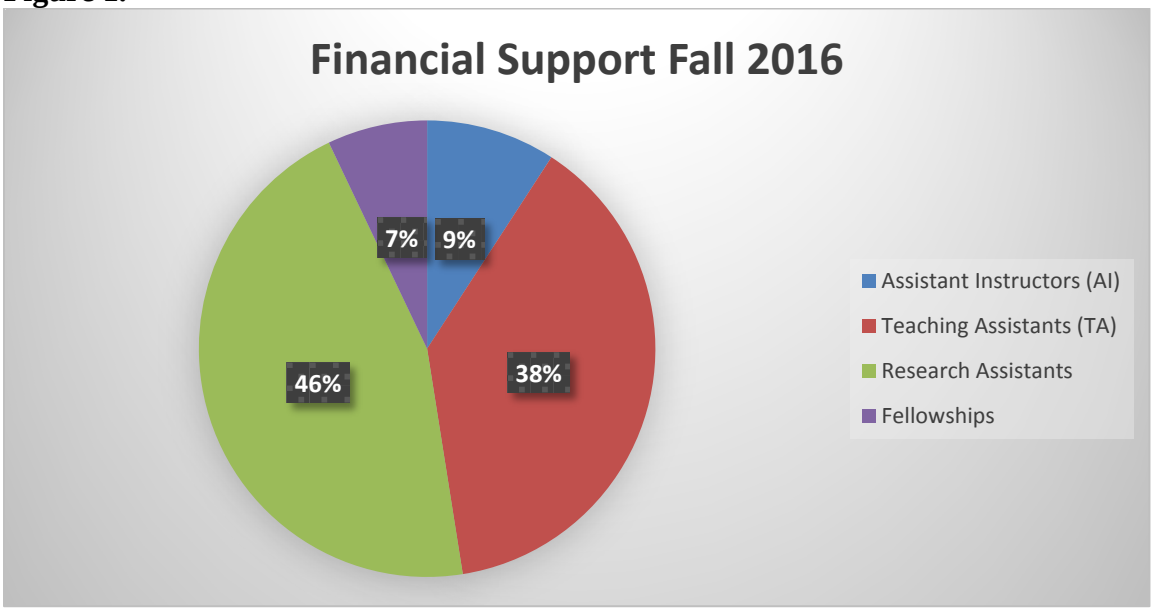
Major Work	
The Core Courses	PHY 385K Classical Mechanics PHY 385L Statistical Mechanics PHY 387K Electromagnetic Theory I PHY 389K Quantum Mechanics I
In-Field Advanced Courses	PHY 392K Solid-State Physics I PHY 392L Solid-State Physics II PHY 392N Many-Body Theory
Dissertation Hours	
Supporting Work	
Out-of-Field Advanced Course	PHY 395K Nonlinear Optics and Lasers
Out of Department Supporting Course	M E 387R Practical Electron Microscopy
Out of Department or Out-of-Field Supporting Course	CSE 392 Parallel Algorithms in Scientific Computing

The last step in the process is the preparation of a dissertation based on original research. The research leading to the dissertation is done under the supervision of a faculty committee chaired by the student's dissertation supervisor. This is certainly the most rewarding and most time-consuming part of the degree program. Approval of the dissertation follows a final oral examination covering the dissertation and related topics in physics. The median number of years for earning a Ph.D. is from 5 to 7 depending on the sub-field.

(b) Available Financial Support

Students are supported as Assistant Instructors (AIs), Teaching Assistants (TAs), and Research Assistants (GRAs) with a few students holding University, NSF, or DOE Fellowships. The funding types are shown in Table I by year of recruitment. The majority of the first-year students are supported as TAs.

Figure 1.



Salaries for TAs and RAs are shown in Table III. For TAs, the Legislature provides $3,784 per long semester and $1,892 in summer in remission of their tuition and fees (called a Tuition Reduction Benefit, also known as TRB). For the GRAs, the sponsoring faculty member provides the same/similar amount of support for tuition and fees. Fringe benefits are provided by either the University in the case of the TAs, or a principle investigator in the case of GRAs.

The level of AI is attained by senior students having appropriate teaching experience. AIs have independent responsibility in the design and teaching in their course, Physical Science 303/304. This experience is excellent for those who wish a teaching career in Physics at colleges.

The University maintains a competitive scholarship program. Every year the Graduate School asks each graduate program to nominate three graduate students for a Continuing Fellowship award. The stipend for 2017-2018 is $28,000 with a $2,185 supplement to help with medical insurance premiums along with full tuition support.

We ask faculty to nominate their best students for this award. The nominations are then reviewed by the Graduate Studies Subcommittee, ranked, and forwarded to the Graduate School where the final decision is made. Typically we receive 1–2 of these fellowships per year.

Table II: Number of Students by Funding Type & Semester, 2011–2017.

	2011	2012	2013	2014	2015	2016	2017
Fall							
TA/AI	120.5	120.5	120	124	114	108	--
GRA	87.5	84.5	79	80	74	81	--
Fellowship	12	17	14	15	15	16	--
Self-Supporting	2	3	2	2	2	4	
Spring							
TA/AI	--	122.5	120	118	115	112.5	100
GRA	--	85.5	85	81	89	75.5	89
Fellowship	--	12	17	14	15	15	16
Self-Supporting		2	3	2	2	2	4

Table III: Graduate Student Salaries for 2017-2018.

Job Title	*20-Hour Appointment / 1-Month Salary*
Teaching Assistant (TA)	$2,250
Assistant Instructor (AI)	$2,385
Graduate Research Assistant (GRA)	$2,250

c. Program Size

Table IV shows the numbers for enrollments and M.A., M.S., and Ph.D. degrees granted in the past 7 years (2010–2017). The number of students enrolled was larger than 200 for many years. Our current enrollment has been controlled partly by the number of offers made during recruitment with a target number determined by surveys of our research groups and by the number of TA positions available. This trend is very much the same as the national trend. The current enrollment is 203 as of September 2017, and the student to faculty ratio is 4.23 (=203/48). Some further decline in the number of students is likely in the next few years as admissions are more closely linked to the availability of external research funding.

The number of Ph.D. degrees granted changes considerably from year to year, but on average stays flat with an average of 28/year.

Table IV: Enrollments and Degrees Granted, 2010–2017.

Academic Year	**2010–11**	**2011–12**	**2012–13**	**2013–14**	**2014–15**	**2015–16**	**2016–17**
Total Enrollment*	225	222	225	215	221	205	209
Doctoral Degees	29	31	24	27	36	23	28
M.A. Degrees	2	4	6	4	7	5	2
M.S. Degrees	1	0	0	0	0	0	0

*Totals are as of September 1st of the indicated year.

The distribution of the students enrolled in the Fall of 2016 and degrees granted in the period 2012-2016 into different research fields are shown in Table V, together with the number of faculty.

In the past seven years (2011–2017), the Department produced 208 doctoral degrees and the number of incoming Ph.D. students over the same period was 238. A measure of our production rate is thus 208/238=87.39%.

Table V: Faculty, Enrollments, and Degrees Granted by Sub-Field.

Research Specialty	2016-17 Faculty	Enrollment* Fall 2016-17		No. of Degrees Granted 2016-17 (2010-16)		
		Master's	Doctoral	Master's	Terminal Master's	Doctoral
Atomic, Molecular, & Optical Physics	8	31	19	0 (2)	1 (5)	5 (29)
Biophysics	2	7	7	0 (1)	0 (3)	2 (11)
Condensed Matter Physics	14	32	38	0 (7)	0 (3)	8 (53)
Cosmology & String Theory	6	11	7	0 (2)	0 (3)	2 (18)
High Energy Physics	7	13	4	0 (1)	0 (1)	2 (16)
Nonlinear Dynamics	2	1	4	0 (0)	0 (2)	1 (6)
Plasma & Fusion	5	13	14	0 (3)	0 (2)	7 (22)
Relativistic Heavy Ion Physics	2	2	1	0 (1)	0 (0)	0 (4)
Relativity & Gravitation	1	0	3	0 (0)	0 (0)	2 (5)
Statistical & Thermal	1	1	0	0 (0)	0 (1)	0 (5)
Non-Specialized	0	0	0	0 (0)	0 (0)	0 (0)
TOTALS:	**48**	**111**	**97**	**0 (17)**	**1 (20)**	**29 (169)**
Full-Time Graduate Students		110	93			
Part-Time Graduate Students		1	4			
First-Year Graduate Students		37	0			

*Students not yet committed to a research specialty are entered under non-specialized.

(d) Admissions Process

The numbers of applicants, TA/GRA positions offered and accepted, and the total number of incoming students in the past seven years (2011-2017) are listed in Table VI. The average number of applicants per year over the same period was 376 (the median was 384). For comparison the average from (2006-2010) was 429.

The average number of incoming students for the Ph.D. program is 36. The average ratio of international to US students during the same years is 1.37 to 1. The selection of the students from the applicant pool is made by the Graduate Recruitment Committee.

The quality of the incoming students is one of the primary concerns of the Department. It has improved recently, but progress in this regard is not as noticeable as the Department would hope. The average yield rate for 2011-2017 was 36%, and the average selectivity was 25% (see Table IV, above, for details). There are two reasons for this:

- Better prospective students tend to go to prestigious schools in the East or West.

- The low amount of financial support the Department has offered to TAs and GRAs. This has improved significantly over the past three years, from a 9-month stipend of $18,000 to a 12-month stipend of $27,000.

In 2001, a Doctoral Harrington Recruitment Fellowship was established at the University with a stipend of $33,000 (TA/GRA salary is $27,000) in addition to full tuition and fees, student medical insurance, and an allowance of $2,000/year for travel, equipment, books, or other professional expenses for five years. The Department has offered one of the Fellowships to a prospective student every year since, but the recipients have turned down the offers to go to more prestigious institutions. The university also established the Provost's Graduate Excellence Fellowships (PGEF). The stipend for these fellowships is $30,000 (TA/GRA salary is $27,000) per year, for a period of five years, an allowance of $2,000/year for professional expenses, tuition, and medical insurance. The program provides two years of fellowship, one year of TA, and two years as an RA. The TA/GRA salaries are augmented to raise them to the $30,000 level of the fellowship years. The target for the physics department is to recruit 6 of these fellowships per year. We attempt to make 20 offers per year, limited by the number of GRA positions available from the faculty. In the first three years of this fellowship, we have recruited 4, 4, and 5 students, respectively.

In addition to these recruitment fellowships, we also have fellowship funds provided by donors to honor past faculty. Currently we have Antoniewicz, Biedenharn, Boner, Downer, Lane, Leonard, Little, Lockenvitz, Matsen, Naito, Riley, Rudmose, and Wheeler fellowships. Part of these endowment funds contribute to the PGEF, but there is sufficient funds for ~10 summer fellowships which are combined with summer TAs (currently ~13) for summer support. New applicants supported on TAs are promised 12-month support for a five-year period.

Table VI: Recruitment, 2011–2017.

	2011*		2012*		2013*		2014*		2015*		2016*		2017	
	U.S.	*Int'l*	*U.S.*	*Int'l*	*U.S.*	*Int'l*	*U.S.*	*Int'l*	*U.S.*	*Int'l*	*U.S.*	*Int'l*	*U.S.*	*Int'l*
Applicant Pool	**348**		**407**		**361**		**399**		**384**		**410**		**321**	
	136	212	189	218	158	203	166	233	143	241	173	237	150	171
Offers	**62**	**39**	**66**	**42**	**57**	**36**	**44**	**43**	**36**	**48**	**62**	**36**	**45**	**36**
TA	31	28	33	35	12	33	8	33	17	38	32	29	26	30
GRA	1	0	1	0	2	1	3	0	0	1	1	2	3	0
Fellowships														
TA + Fellow	29	8	29	4	43	0	33	7	9	7	15	0	N/A	N/A
Full Fellow	1	0	1	0	N/A	N/A	N/A	N/A	10	1	13	3	16	5
Other	0	0	0	0	0	0	0	0	0	0	1	2	0	1
*No Aid***	0	3	2	3	0	2	0	3	0	1	0	0	0	0
Acceptances	**38**		**39**		**28**		**40**		**34**		**37**		**26**	
	17	**20**	**17**	**22**	**17**	**13**	**19**	**16**	**14**	**18**	**20**	**17**	**16**	**10**
TA	9	14	10	18	5	11	4	11	7	12	13	13	11	9
GRA	1	0	1	0	1	0	1	0	0	1	1	2	1	0
Fellowship														
TA + Fellow	29	8	6	2	11	0	14	2	4	3	3	0	N/A	N/A
Full Fellow	0	0	0	0	N/A	N/A	N/A	N/A	3	1	3	1	4	1
Other	0	0	0	0	0	0	0	0	0	1	0	1	0	0
*No Aid***	0	3	0	2	0	2	0	3	0	1	0	0	0	0
Selectivity (%)	**29.0**		**26.5**		**25.8**		**21.8**		**21.9**		**23.9**		**25.2**	
	37.4	16.7	39.8	18.0	34.3	15.5	26.5	18.5	21.7	20.6	37.4	15.5	27.1	15.5
Yield (%)	**36.6**		**36.1**		**32.3**		**40.2**		**38.1**		**37.8**		**32.1**	
	27.4	51.3	25.8	524	29.8	36.1	43.2	37.2	38.9	37.5	32.3	47.3	35.6	27.8

*From 2011 to 2014, all students receiving fellowship offers received a TA with it. In 2015 and 2016, we began offering a number of full fellowships, and thus a portion of fellowship offers were these and the rest were as in 2011–14. In 2017 all fellowships were full fellowships and, thus, no combined TA + fellowship offers were made.

**U.S. students not offered Aid of any kind were typically those seeking a terminal master's degree. International students not offered Aid of any kind were typically participants in the Würzburg Exchange Program.

For the recruitment of students from Underrepresented Minority (URM) backgrounds the College of Natural Sciences, with the support of the Provost's Office, has, for the past two years, awarded ten inclusivity fellowships. The awardees receive:

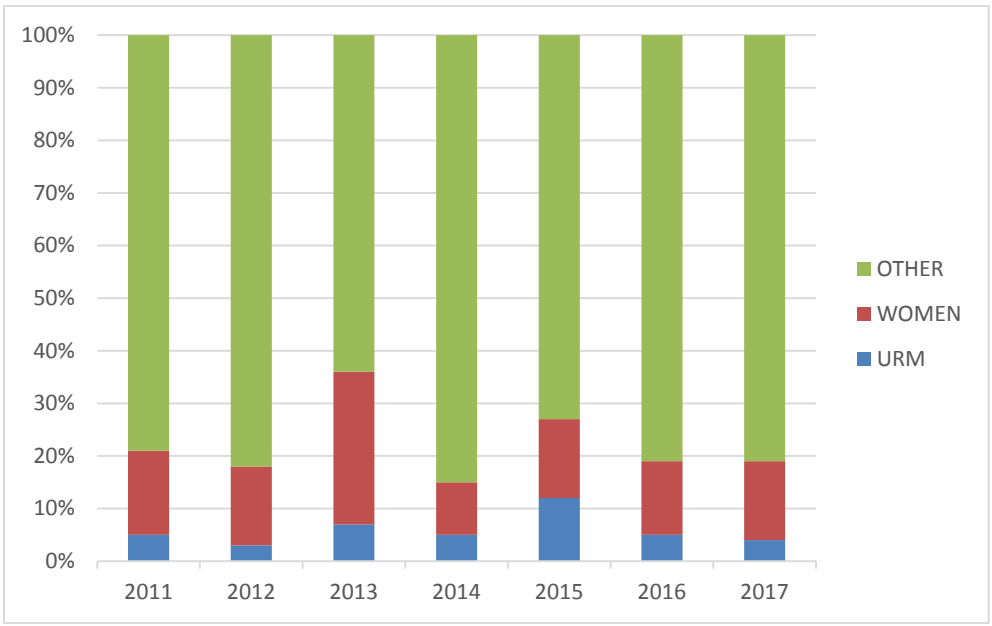
- Year 1: Full fellowship including annual stipend of $31K, full tuition support, and one-time payments (at the beginning of each long semester) to cover the cost of staff (UT Select, employee only) health insurance.
- Years 2-5: $4,000 annually in GRA/TA "bump-up" fellowships. The students are appointed as a GRA or TA with full tuition support for 12 months at an annual rate of $27K. The fellowship will bring the total annual stipend to $31K.

For the 2017-2018 class Physics was awarded three fellowships, but all the offers were declined.

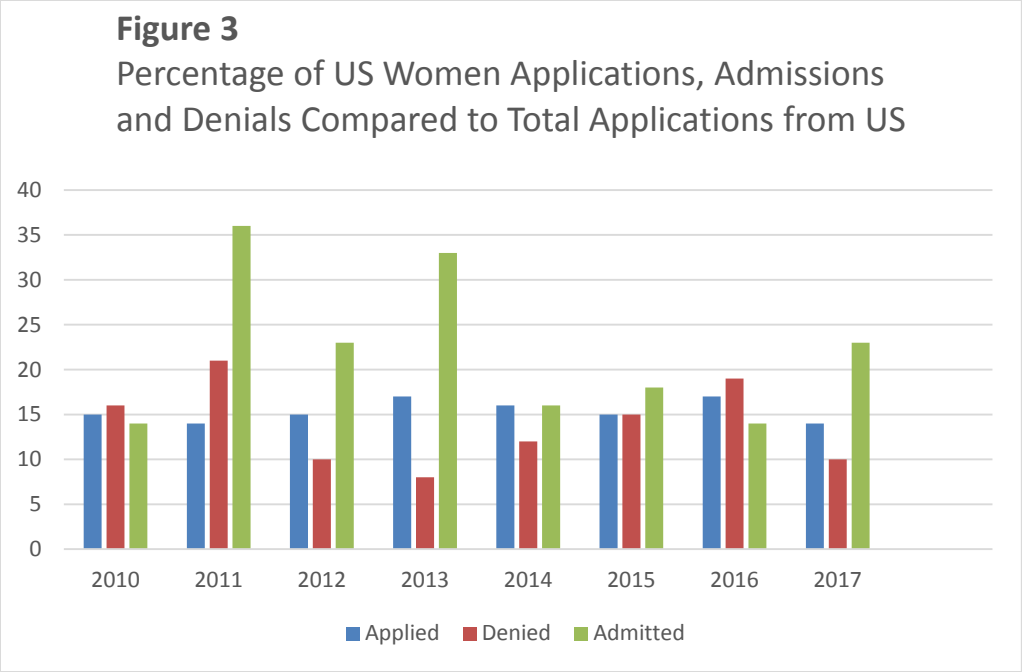
Previously, the graduate school had two types of Diversity fellowships. The mentoring fellowship with a stipend of $16,000 (over 9 months), tuition assistance of $3,784 per semester and a $1,100 supplement for medical insurance. This program also provided travel grants for student recruitment. For the 2016 recruitment year the department offered two-year diversity fellowships to two black students. One student rejected our offer; the other has deferred.

We also make a concerted effort to recruit women physicists. The Rudmose fellowship program is used to augment the TA stipend of women applicants, typically by $6,000. The percentage of women and URM admitted during the period 2011-2017 is displayed in the figure, below.

Figure 2.

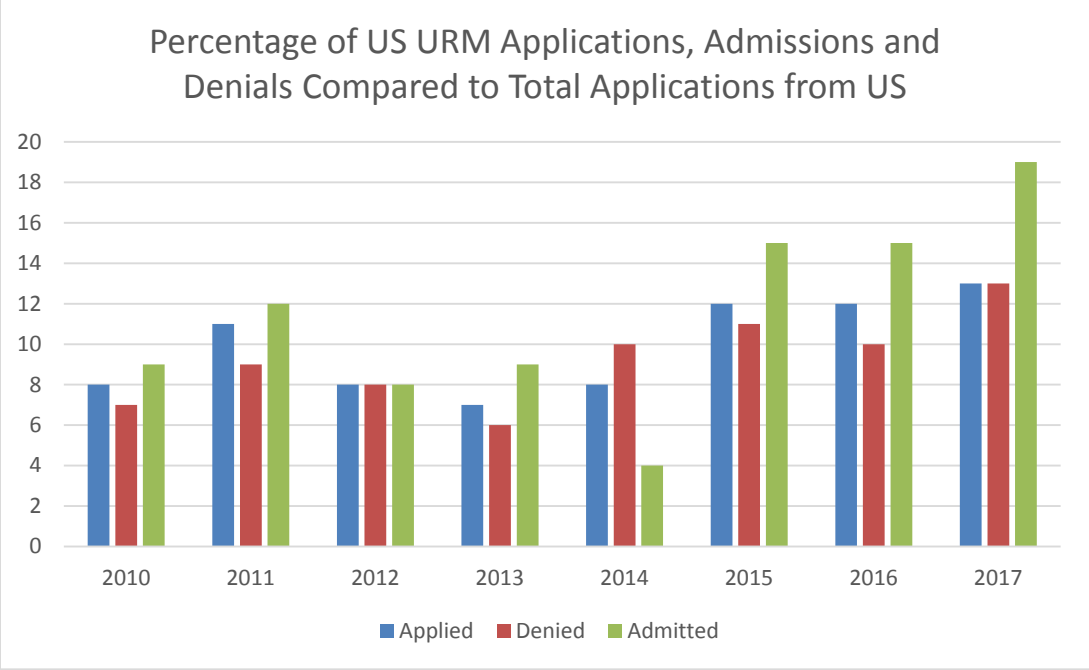


In Figure 3 we compare the number of US women that applied to our graduate program and were admitted or denied admission from 2011-2017. The percentages in these three categories show no negative bias in the admissions process. The statistics for international women applications were not available.



In Figure 4 we compare the number of US URM that applied to our graduate program, were admitted or denied admissions from 2011-2017. The percentages in these three categories show no negative bias in the admissions process.

Figure 4.



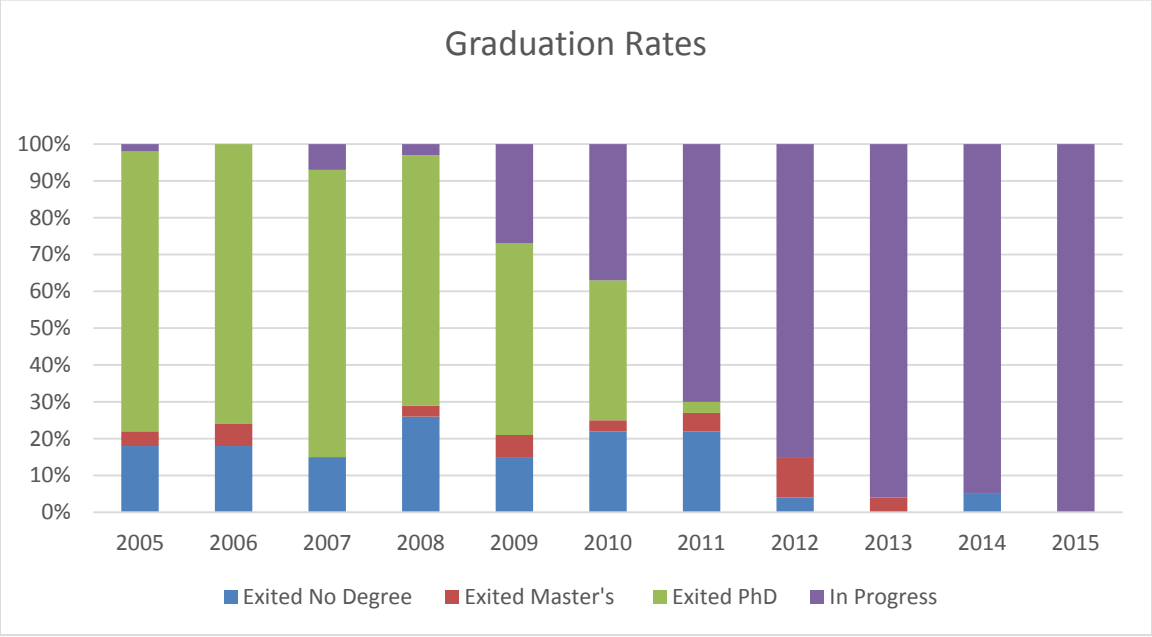
Our averages for URM (6.2%) and women graduate students (16.5%) are close to the national average, respectively (APS: ~6%, ~20%), but as a large public university in a diverse state we would like to do better. This year only one of the students is an URM in spite of making three diversity fellowship offers and admitting a record number of URM (see Figure 4).

Since March 1995, the Department has held an Open House Recruitment event every year, inviting ~60 of the top applicants residing in the United States (both US and international). It is held in late February. In the evening of arrival, we hold a poster session at the AT&T center where the students are housed. The posters are presented by our graduate students who also answer questions regarding their research. Faculty are also available to answer questions, and a buffet is provided. In the morning, we have an organized session where a representative of each of our research groups, who may be faculty, a student or both, introduces their research program in a 20-30 minute presentation. The afternoon is devoted to meetings with faculty and the laboratory tours. In the evening, we invite the attendants to a dinner, which is also attended by members of the Recruitment Committee of the Department, some of our faculty, and students. The next day, Committee members and students take the applicants on tours of Austin to show them the city and surrounding areas.

e) Degree Completion Rates, and Time-to-Degree

For each cohort, the Graduate School tracks the number of students that exit without a degree, those that exit with a Master's and those that complete a PhD. The percentages for each class are displayed in Figure 5.

Figure 5.



The average time to degree, as computed by the Graduate School, for the Ph.D. and Master's programs as well as the average time a student takes to exit the program without a degree is given in Table VII. Unfortunately, this average is for the period 1989–2015.

Table VII: Time to Degree (1989-2015).

	Exited No Degree	Exited Master's	Exited Ph.D.
Average Years	2.06	3.78	6.8
Median Years	2	3	7

(f) TA Workoad Policies

Before graduate students can have contact with students in a classroom they must pass written and oral exams on their fluency in the English language. If they fail this exam they are required to take the appropriate courses in English as a Second Language until they pass the exams. Teaching assistants are also required to take PHY 398T, Supervised Teaching in Physics. This course presents recent techniques developed to improve the teaching of physics. In addition to teaching strategies the course covers administrative procedures, and classroom responsibilities including the university non-discrimination and harassment polices. It also includes a module on scientific ethics as required by the National Science Foundation and the National Institutes of Health. Students are required to prepare model classroom lectures and present them to the class, where they then receive feedback on improving their lectures.

Teaching assistants teach physics laboratory courses, discussion/problem sessions, and they grade upper division physics courses and the core graduate classes.

We have developed written work load specifications for all of their responsibilities. For the teaching of elementary physics laboratories they are responsible for two three-hour laboratories or three two-hour laboratories. The work load includes time for preparation, instructional meetings for teaching the labs, office hours, and the grading of lab reports. The total workload is estimated at 15-20 hours depending on the TA's experience and efficiency of grading. Techniques for improving grading are also taught in TA meetings.

Discussion sections also require 5-6 contact hours and the workload includes homework preparation, attendance at lectures, and proctoring of exams. Grading for courses with discussion sessions is computerized and the TA's responsibility is mostly helping with problem selection.

In 2017 the College of Natural Sciences has established a new policy limiting the total numbers of semesters that students may be supported as TAs. The motivation is to improve the graduate experience. The limit will be 6 semesters of TA support for experimentalists and 8 semesters for theorists. While this may not be a major problem for most experimental research programs where GRA funding is available it does limit the flexibility of the department to fund students in areas where funding is lost. In theoretical particle physics the NSF/DOE funding provides ~1/3 of the GRA cost per investigator per year. The particle Theory Group has used this funding for summer support. The proposed reduction from 12 semesters of TA support to 8 semesters could

over a period of years force a significant reduction in the number of graduate students that the Theory Group can admit as it is unlikely that the students will graduate in 4 years. The average time to degree for Particle Theory Students in our department for the period 2007-2013 was 6.3 years while in the top 15 institutions the average was 5.9 years. See table from a recent NSF-sponsored study on time-to-degree in the Appendices to this report. This concern may be addressed through increased endowment support. This one reason why obtaining new graduate student endowments is the highest development priority for the Physics Department. Obtaining additional graduate student endowments is also the highest priority for the College's development effort.

(g) Graduate Student Professional Development Opportunities

In early 1980, our graduates obtained employment largely in industry. A significant change has taken place since then; now, more than half of our graduates are employed either as postdoctoral fellows at research universities/research institutions, or as teachers at liberal arts colleges. Employment in industry accounts for about a quarter. Table VIII shows the details of the employment of our graduates just after graduation. It is notable that a large portion of the MA/MS graduates enter the Ph.D. program.

The College of Natural Sciences provides access to a Career Development Specialist to graduate students in all CNS departments. The specialist consults on a wide range of matters, including career exploration, non-academic job searches, academic job searches, converting a CV to a resume, interview preparation, and others. Since April 2014 and October 2017, 49 Physics graduate students have taken advantage of these services. Also, eight postdocs from our Department have as well. Most often the graduate students have consulted on career exploration, resume and cover letters, and job/internship searches.

Table VIII: Placement Information, 2005–2014.

		Three-Year Period: 2005–2008	Three-Year Period: 2008–2011	Three-Year Period: 2011–2014	Totals	Percentages
Education	University Faculty	3 (12)	4 (6)	4 (10)	11 (28)	4.01% (10.22%)
	University Non-Faculty*	47 (40)	45 (40)	38 (27)	130 (107)	47.45% (39.05%)
	Secondary Teaching	2 (1)	1 (0)	1 (1)	4 (2)	1.46% (0.73%)
National Laboratories & Research Institutes		27 (25)	17 (17)	6 (7)	50 (49)	18.25% (17.88%)
Private Sector	Research	13 (12)	18 (15)	15 (16)	46 (43)	16.79% (15.69%)
	Non-Research	2 (4)	5 (9)	7 (7)	14 (20)	5.11% (7.30%)
Other		2 (2)	0 (0)	1 (1)	3 (3)	1.09% (1.09%)
Unknown		3 (3)	3 (6)	10 (13)	16 (22)	5.84% (8.03%)

*Figures outside parentheses are for Initial Posting; those inside parentheses are for Current Posting (where available)

Table VIII also shows where our Ph.D. graduates are now, separately for those that graduated on or after 2005 and before 2014. Among 274 Ph.D. graduates we could confirm, 28 (10%) are now professors at research universities/research institutions. Almost the same number of graduates are employed in industry. The rest are postdoctoral fellows at research universities/research laboratories or are teaching faculty at liberal arts colleges. (The appendix of this report contains lists of places where our students have been placed, together with their sub-fields, for the period 2001–2017).

For the most part, the professional development of our students has been traditional. They receive support to go to conferences/school both through research grants and through limited funding from the graduate school, asked to give internal seminars presentations and they are motivated to find internships in industry. To encourage the latter, every Spring semester, the Physics Department runs the Technical Seminar which invites physicists from industry to share their research and experiences with our students. This seminar also provides a networking opportunity. Approximately two years ago the College of Natural Sciences hired a Graduate Student and Postdoctoral Career Development Specialist who works with our students to find options outside academia. Although not all students are aware of this opportunity, a good fraction of physics graduate students have already taken advantage of his expertise.

In 2015-16, the College of Natural Sciences convened a 21st Century Graduate Education Working Group and charged that committee to make bold and innovative recommendations about the future of graduate education in the College. In 2016-17 an Implementation Task Force was formed to determine what the College should do in response to the report, how to facilitate programmatic innovation to effect recommended improvements, and how to evaluate effects of these changes. Among new professional development programing under development of discussion are:

- A 3-course Teaching & Mentoring Concentration currently being piloted within the College for PhD students interested in pedagogics;
- A concentration in Communications
- A concentration in Leadership & Administration
- Scaling statistics and coding workshops to serve more students
- A Public Policy Concentration

Other Matters

B. Strategic Plan

The program has not recently developed a strategic plan.

C. Ranking

In the 2015 US News and World Report on "Best Graduate Schools" we are ranked 14th (tied with U. of Maryland College Park). This ranking is consistent with the older ranking by the National Research Council. We are listed with three specialties (Ranked 14th in AMO, 9th in Cosmology/Relativity/Gravity, and 3rd in Plasma).

D. Competition

Our competition in total rank includes 1. MIT, 2. Cal. Tech*, 2. Harvard*,2. Princeton*,2. Stanford*, 2. UC Berkeley*, 7. Cornell, 7. Chicago, 9. U. of Illinois Urbana-Champaign, 10. UC Santa Barbara, 11. Columbia, 12. U. Michigan Ann Arbor, 13. Yale, 14. 14. University of Texas Austin*, 14. U. of Maryland*. (Those schools indicated with an asterisk are tied in rank.)). These rankings are based on a variety of criteria, but primary is faculty research quality and productivity. The higher ranked universities also have greater resources in the form of privately funded research centers and a greater percentage of graduate students funded with federally funded fellowships. Since graduate students are aware of the importance of the rankings they prefer to attend those universities with higher rankings, given an offer.

E. Competitive Advantage

Historically we have been strong in Relativity, Theoretical Particle Physics, AMO, Plasma Fusion, and Nonlinear Mechanics. At one time, we had 6 members of the national academy in these fields. Because of retiring faculty, our emphasis has shifted to Cosmology, AMO, Laser Plasma, Fusion Plasma Theory, Condensed Matter, Biophysics, and Particle Experiment. We have high level faculty and research resources in condensed matter as the Texas Materials Institute (the Center for Nano- and Molecular Science recently merged with the Texas Materials Institute under the latter's name) and arguably the best resources in laser plasma physics in the U.S. The quality of our faculty and the size and breath of our program has been a competitive advantage for the recruitment of graduate students. In recent years the reputation of Austin's quality of life had also been an advantage in recruiting students.

F. Competitive Disadvantage

Students with a choice make decisions based on rankings, success of previous graduates, amount and type of funding, research opportunities, and program size.

Given our aging faculty and the foreseeable retirement of some of its most prominent members there is a concern that our ranking will continue to decline (We were 10th in 2006-2010, we are 14th now). Texas geographical isolation, the perceived antagonism of its state government toward academic pursuits and the lack of private funding for physics make attracting new outstanding faculty difficult. The Texas A&M

Physics Department has had some success counteracting the first two concerns with the generous gift of the Mitchell Foundation.

The plasma specialty in our ranking is an example where the declining number of faculty will cause a decline in research productivity and faculty rank. At the height of our research productivity in plasma physics, we had 4 experimental faculty and eight theory faculty. At the time we had a director of IFS who was a member of the national academy (Marshall Rosenbluth). We currently have one experimental faculty member and three theory faculty. The loss of faculty will also impact the continued funding for the Institute for Fusion Studies.

A concern for some faculty members, in view of foreseeable declining budgets for funding agencies, is that the new policies that limit the number of semesters a student can work as a TA, together with the new policy passing the tuition gap onto the supervisors, will force reductions in program size and research output. These measures are good for the graduate students because they effectively increase their salary (by making the supervisor pay for the tuition gap) and will give them more time to pursue their research, but will likely have the consequence of reducing the size of the incoming class. With a smaller cohort and facing the continuous pressure to teach a large number of courses with fewer faculty, it may be harder to justify teaching the advanced courses necessary to bring the graduate students up to speed.

However, if these graduate-student friendly policies (including higher stipends and guarantees of five years of support) result in recruitment of higher quality graduate students, the concerns about lost research productivity may not be borne out. Also, pressure on faculty teaching can be addressed in a number of ways other than reducing advanced courses.

G. Current Enhancement Efforts

Our current efforts for improving our department focus on the recruitment of new faculty and graduate students. Our efforts to improve graduate student recruitment are listed above in the narrative. Since our last external review in 2011, we have recruited seven faculty:

Tim Andeen, Elena Caceres, B. Manuel Hegelich, Can Kilic, Keji Lai, Peter Onyisi, and Andrew Potter. Raphael Flauger and Michael Barnes left after a year in Austin. This rate of recruitment has not kept up with the number of retirees and faculty leaving the department. As a result the department has decreased from 54 to 48 faculty members since 2011. The future portents an even a more rapid decrease in the size of the department as there are now 10 faculty members that are 75 or older. To continue the breadth in our research program that graduate student applicants find attractive, we must recruit at a more rapid rate. This year, we have an active effort to recruit two senior faculty in the area of quantum information, two senior diversity candidates and a junior faculty member. More junior faculty openings are on hold until the senior appointments are finalized.

To address the insufficiency of funding for the graduate program, the department is actively working on development with the support of the College. Also, significant temporary funding (four years) has been committed by the College to assist in implementing new policies affecting the number of semesters graduate students may be appointed as teaching assistants. The College is also providing temporary funding (two years) to assist with payments of the tuition gap. Overall, these policies will be phased in over time, so that adjustments can be made if actual problems develop.

Finally, this academic year the department is undertaking a curriculum review of the graduate program. The last substantial changes happened 25 years ago. The goals are: (1) to make sure that our courses are still optimized to meet our graduate students' needs and (2) to make sure our policies facilitate students becoming immersed in research as early as possible.

H. Selectivity Index

The selectivity index (% of graduate student applicants made an offer) for the years 2011-2017 is 29, 27, 26, 22, 22, 24, and 25%.

I. Yield Index

The yield index (% of admitted students who enrolled) for the years 2011-2017 is 37, 36, 32, 40, 38, 38 and 32%.

J. Current Admissions Process

The Admissions Process has been described earlier in this report.

K. Additional Information

Recently an NSF sponsored study compared the time to degree at this physics department with that of the top 15 institutions, including the University of Maryland at College Park, the University of Illinois at Urbana-Champaign and the University of Michigan at Ann Arbor. The results are displayed on the following pages.

The mean at UT Austin is 6.47 (s.d. 1.48) years while the mean of the top 15 institutions is 6.15 (s.d.1.51) years.

Prepared by Tim Kinoshita, Maura Borrego and David Knight as part of NSF grant nos. 1535226 (to Virginia Tech) and 1535462 (to UT Austin)

Time to Degree by Funding Type for Physics PhDs, 2007-2013

PHYSICS	Texas-Austin			**Top 15 Institutions			All Institutions		
	n	Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.
ALL	155	6.47	1.48	2920	6.15	1.51	10551	3.14	1.88
Subfield									
Acoustics	3	7.25	3.03	7	6.67	1.93	116	6.59	3.03
Atomic/Molecular/Chem	15	6.24	1.79	232	6.22	1.38	734	6.31	2.06
Particle Physics	19	6.27	1.15	534	5.91	1.40	1529	6.05	1.63
Biophysics	6	6.97	0.59	260	6.13	1.26	797	6.09	1.50
Nuclear Physics	3	6.36	0.85	83	6.22	1.43	518	6.24	1.49
Optics/Photonics	11	6.62	1.31	167	5.88	.124	1028	6.18	2.25
Plasma/Fusion	15	6.37	0.98	155	6.15	1.41	417	6.33	2.02
Polymer Physics				19	6.25	1.42	173	5.71	1.54
Low Temperature	50	6.12	1.05	672	6.28	1.61	2570	6.16	1.77
Applied Physics	4	7.06	1.25	361	6.20	1.37	904	6.09	2.13
Medical Physics				31	6.48	2.31	273	5.62	2.16
Physics, General	15	7.68	2.67	215	6.31	1.72	757	6.26	1.91
Physics, Other	14	6.37	1.38	184	6.19	1.95	735	6.02	1.91
Male	134	6.53	1.53	2419	6.16	1.53	8577	6.14	1.93
Female	21	6.06	1.03	501	6.11	1.43	1973	6.13	1.69
White	80	6.40	1.75	1742	6.14	1.56	5701	6.17	2.01
Hispanic	8	6.56	0.72	117	6.28	1.97	415	6.11	1.82
Asian	60	6.56	1.22	902	6.12	1.38	3887	6.03	1.62
Black	2	6.67	0.94	32	6.60	1.14	167	6.98	2.78
Other	3	6.33	0.58	87	6.29	1.20	265	6.24	1.74
Refuse				5	6.07	0.81	11	5.62	1.09
Unknown	2	5.75	1.41	35	6.11	1.35	105	6.61	2.06
US Citizen	71	6.31	1.27	1663	6.25	1.60	5179	6.29	2.12
Non-US Citizen	83	6.62	1.64	1245	6.01	1.35	5329	5.87	1.60
2007	17	6.15	1.47	442	6.17	1.49	1387	6.27	2.49
2008	25	6.05	1.23	404	6.10	1.60	1391	6.15	1.86
2009	30	6.99	1.36	418	6.18	1.75	1471	6.10	2.15
2010	16	6.57	1.23	412	6.16	1.25	1414	6.11	1.67
2011	16	6.42	1.33	382	6.13	1.54	1578	6.14	1.75
2012	24	6.55	2.34	406	6.25	1.51	1625	6.14	1.64

2013	27	6.35	0.95	456	6.07	1.28	1685	6.06	1.55
Primary Funding Type									
Fellowship	3	5.44	1.71	509	5.76	1.26	1255	5.81	1.52
Grant	1	6.75	NA	103	6.11	1.37	402	6.04	1.59
Teaching assistantship	47	6.60	1.08	359	6.16	1.52	1843	6.26	1.99
Research assistantship	81	6.10	1.22	1832	6.22	1.48	6353	6.09	1.62
Other assistantship	1	10.00	NA	2	8.88	1.69	12	6.58	1.94
Traineeship	1	5.75	NA	9	6.46	1.26	33	5.74	1.16
Internship							8	5.94	1.47
Loans				2	8.67	1.53	52	7.02	3.25
Personal savings	1	6.00	NA	4	8.85	5.34	32	8.46	6.25
Personal earnings				11	6.69	2.47	79	8.16	4.51
Other savings/earnings				13	7.03	2.03	79	6.98	3.53
Employer assistance	3	9.69	5.59	13	7.04	4.65	116	7.18	4.74
Foreign support				19	5.65	1.06	57	5.54	1.34
Other support				1	5.75	NA	6	6.54	2.43
No primary source	17	7.30	1.29	43	6.85	1.66	224	6.56	2.57
# of Funding Types									
0	3	9.69	5.59	15	7.26	4.94	138	7.81	5.37
1	17	5.68	1.54	259	6.15	1.87	1109	5.95	2.19
2	61	6.34	0.97	1073	6.18	1.48	4284	6.14	1.76
3	44	6.48	1.41	1155	6.09	1.38	3526	6.09	1.70
4	11	6.13	1.10	361	6.13	1.41	1283	6.13	1.54
5	1	7.75	NA	23	6.19	1.18	101	6.13	1.20
6	1	5.75	NA	2	5.50	0.35	7	5.98	1.18
7							1	6.58	NA

**Top 15 Institutions

- Massachusetts Institute of Technology, 166683
- California-Berkeley, 110635
- Harvard, 166027
- California Institute of Technology, 110404
- Stanford, 243744
- Princeton, 186131
- Cornell, 190415
- University of Chicago, 144050
- Illinois-Urbana/Champaign, 145637
- California-Santa Barbara, 110705
- Michigan-Ann Arbor, 170976
- Columbia, 190150
- Yale, 130794

- Texas-Austin, 228778
- Maryland-College Park, 163286

Methods

The data is from the Survey of Earned Doctorates (SED) data set (http://www.nsf.gov/statistics/srvydoctorates/), which is managed by the University of Chicago's NORC and monitored by the National Center for Science and Engineering Statistics. The SED is characterized by comprehensive coverage of doctoral recipients from institutions in the United States. Data collection is sponsored by NSF, NIH, NASA, the Department of Education, the Department of Agriculture, and the National Endowment for the Humanities. The SED has collected information from research doctoral recipients (Ph.D.) from accredited institutions within the United States continuously since 1957–1958 using a combination of self-administered paper surveys, web-based surveys, and computer-assisted telephone interviews. Graduate schools typically collect SED responses at the time of degree completion. For the 2012 SED, 92% of the 51,008 recipients of doctorates completed the survey; non-respondents were reconstructed from any other available information.

[A]

18 Characteristics of Graduate Programs Report
Department of Physics[1], The University of Texas at Austin

2017–2018 Report for 2016–2017

1) Number of Degrees Per Year.

Operational Definition: For each of the three most recent years, average of the number of degrees awarded per academic year.

Departmental Response:

2013–2014	2014–2015	2015–2016
27	36	23

[Departmental] Comments (if any):
All periods run Sept. 1–Aug. 31 unless otherwise stated.

2) Graduation Rates.

Operational Definition: For each of the three most recent years, the average of the percent of first-year doctoral students[2] who graduated within ten years.

Departmental Response:

2013–2014	2014–2015	2015–2016
57.10%	70.80%	71.10%

[Departmental] Comments (if any):
GSIS data is off, we calculate the following Graduation Rates:

2013–2014	2014–2015	2015–2016
100.00%	100.00%	100.00%

3) Average Time to Degree.

Operational Definition: For each of the three most recent years, average of the graduates[3] time to degree.

Departmental Response:

[1] Programs included only if in existence three or more years. Program is defined at the 8-digit CIP code level.
[2] First-year doctoral students. Those students who have matriculated as doctoral students with a doctoral degree objective.
[3] For each academic year, the time to degree is defined as beginning the year students matriculated with a doctoral degree objective until the year they graduated.

2013–2014	2014–2015	2015–2016
6.8 years	**6.8** years	**6.7** years

[Departmental] Comments (if any):
In this instance, given the size of our program, a median is more accurate than a simple mean, thus prior to 2011-2012 we reported medians:

2013–2014	2014–2015	2015–2016
6.00	6.70	6.00

The current figures are means. Figures prior to 2011-2012 were medians across all subfields of Physics.

4) Employment Profile (in field within one year of graduation).

Operational Definition: For each of the three most recent years, the number and percent of graduates by year employed, those still seeking employment, and unknown.

Departmental Response:

2013–2014	2014–2015	2015–2016
(24) 88.9% employed	**(28) 77.8%** employed	**(8) 34.8%** employed
(3) 11.1% unknown	**(8) 22.2%** unknown	**(15) 65.2%** unknown

[Departmental] Comments (if any):
N/A

5) Admission Criteria.

Operational Definition: Description of admission factors.

Departmental Response:

https://ph.utexas.edu/prospective-graduate-students/admissions

[Departmental] Comments (if any):
GRE General & Physics Subject Test Scores; 3 Letters of Recommendation; GPA; TOEFL/IELTS Scores (if applicable); and Statement of Purpose.

6) Percentage of Full-Time Students.

Operational Definition: FTS[4] / number of students enrolled (headcount) for the last three fall semesters.

Departmental Response:

2013–2014	2014–2015	2015–2016
198/208	204/217	194/202
95.2%	94.0%	96.0%

[Departmental] Comments (if any):
N/A

7) Average Institutional Financial Support Provided.

Operational Definition: For those receiving financial support, the average monetary institutional support provided per full-time graduate student for the prior year from assistantships, scholarships, stipends, grants, and fellowships (does not include tuition or benefits). If you wish to indicate tuition and benefits in addition to the Responses here, please include amounts and reason in "Comments".

Departmental Response:

$23,072

[Departmental] Comments (if any):
We calculate: $31,215. Our figure includes Tuition Reduction Benefit, medical benefits ,and fellowship funding from all sources, but NOT Tuition Waivers. Many prestigious national fellowships not administered through The Graduate School are not included in the GSIS number, also departmental fellowships do not seem to be represented in the GSIS figure either.

8) Percentage Full-Time Students with Institutional Financial Support.

Operational Definition: In the prior year, the number of FTS with at least $1000 of annual support / the number of FTS.

Departmental Response:

191/191 100%

[Departmental] Comments (if any):
N/A

[4] This report includes only students enrolled full time in the fall semester of the given year. Full-time enrollment is defined as enrollment for 9 hours or more of course work.

9) Number of Core Faculty.

Operational Definition: Number of core faculty in the prior year.

Departmental Response:

69

[Departmental] Comments (if any):
This figure (69) includes all GSC members, 1/4 of whom are faculty from outside of the Physics Department proper. The number at left represents faculty eligible for participation in the PhD program. The number of faculty who are currently actively involved is 50 (which is the number of Physics Faculty).

10) Student to Core Faculty Ratio.

Operational Definition: For each of the three most recent years, average of full-time student equivalent (FTSE) / average of full-time faculty equivalent (FTFE) of core faculty.

Departmental Response:

2013–2014	2014–2015	2015–2016
198/75	**204/72**	**194/69**

[Departmental] Comments (if any):
Prior to 2011-2012, the Core Faculty # was taken to include only professors in the Department of Physics. Using this method of Core Faculty Calculation, The ratios would be:

2013–2014	2014–2015	2015–2016
3.80	3.82	4.20

11) Core Faculty Publications.

Operational Definition: For each of the three most recent years, average of the number of discipline-related refereed papers or publications, books or book chapters, juried creative or performance accomplishments, and notices of discoveries files or patents issued per core faculty member.

Departmental Response:

2013–2014	2014–2015	2015–2016
6.04	**8.27**	**8.03**

[Departmental] Comments (if any):

All periods run Jan. 1-Dec. 31(2014–15 = 2014); all data is from CVs, EBSCO INSPEC, & Web of Science; prior to 2011-2012, the Core Faculty # was taken to include only professors in the Department of Physics (those most actively involved in graduate education in Physics).

Data at right relies on self-reporting which is not always consistent; a manual count of each professor's publications yields the following averages for professors in the Department under the old definition of Core Faculty:

2013–2014	2014–2015	2015–2016
8.36	8.27	8.03

The current methodology also uses the GSC count from the current year and does not historicize the numbers. We are uncertain if the number reported by GSIS contains publications from those GSC members outside of the Department of Physics.

12) Core Faculty External Grants.

Operational Definition: For each of the three most recent years, (1) average of the number of core faculty receiving external funds, (2) average external funds per faculty, and (3) total external funds per program per academic year.[5]

Departmental Response:

2013–2014	2014–2015	2015–2016
(1) **58**	(1) **54**	(1) **53**
(2) **$397,180**	(2) **$415,384**	(2) **$399,045**
(3) **$23,036,446**	(3) **$22,430,753**	(3) **$21,149,400**

[Departmental] Comments (if any):
Figures from the GSIS system rely on self-reported data and are therefore at least questionable.

2013–14 = June '13-May '14 (w/ 52 Core Faculty) = **78.21%** (because we believe the word "average" is actually intended to be "percentage", as mathematically an average is impossible/meaningless in this instance), $316,405/core faculty member, Total Research Expenditures from External Sources (not including state or university funds) is: $16,453,078.

2014–15 = June '14-May '15 (w/ 52 Core Faculty) = **78.21%** (because we believe the word "average" is actually intended to be "percentage", as mathematically an average is impossible/meaningless in this instance), $343,503/core faculty member, Total Research Expenditures from External Sources is: $17,862,201.

[5] All external funds received by core faculty from any source including research grants, training grants, gifts from foundations, etc., reported as expenditures.

2015–16 = June '15-May '16 (w/ 50 Core Faculty) = **79.38%** (because we believe the word "average" is actually intended to be "percentage", as mathematically an average is impossible/meaningless in this instance), $338,435/core faculty member, Total Research Expenditures from External Sources is: $16,921,743.

13) Faculty Teaching Load.

Operational Definition: Total number of semester credit hours in organized teaching courses taught per academic year by core faculty divided by the number of core faculty.

Departmental Response:

2013–2014	2014–2015	2015–2016
362.2	**364.4**	**385.1**

[Departmental] Comments (if any):
We believe that the GSIS numbers provided for this metric take the Physics semester credit hours and apply the new Core Faculty definition without including the semester hours taught by the additional faculty members in other departments.

When we calculate the 2015-2016 figure with the 50 Core Faculty in our Department, the number is 502.6 and the figure for 2014-2015 (using the same method) is: 497.5.

The current methodology also uses the GSC count from the current year and does not historicize the numbers. We are uncertain if the number reported by GSIS contains publications from those GSC members outside of the Department of Physics (e.g., in the College of Engineering, etc.).

14) Faculty Diversity.

Operational Definition: Total number of semester credit hours in organized teaching courses taught per academic year by core faculty divided by the number of core faculty.

Departmental Response:

White	Black	Hispanic	Other
52 (male)	**1** (male)	**1** (male)	**8** (male)
4 (female)	**0** (female)	**1** (female)	**2** (female)

[Departmental] Comments (if any):
"Other" includes Non-U.S. Citizens.

15) Student Diversity.

Operational Definition: Enrollment headcount by ethnicity (White, Black, Hispanic, Other) and gender in program during the prior year.

Departmental Response:

White	Black	Hispanic	Other
59 (male)	**1** (male)	**7** (male)	**100** (male)
13 (female)	**0** (female)	**2** (female)	**12** (female)

[Departmental] Comments (if any):
"Other" includes Non-U.S. Citizens.

16) Date of External Review.
Operational Definition: Date of last formal external review, updated when changed.

Departmental Response:

February 2011

[Departmental] Comments (if any):
N/A

17) External Program Accreditation.
Operational Definition: Name of body and date of last program accreditation review, if applicable, updated when changed.

Departmental Response:

N/A

[Departmental] Comments (if any):
N/A

18) Student Publication & Presentations.
Operational Definition: Name of body and date of last program accreditation review, if applicable, updated when changed.

Departmental Response:

453

[Departmental] Comments (if any):
Figure is for 9/1/2013-8/31/2016.

(B) Student Enrollment. (2016)

Doctoral Student Enrollment

Academic Year	Students Enrolled
2013	198
2014	204
2015	194
Total	596

Master's Student Enrollment

Academic Year	Students Enrolled
2013	5
2014	8
2015	2
Total	15

[C] Graduate Licensure Rates: NOT APPLICABLE

[D] Alignment of Program With Stated Program and Institutional Goals and Purposes.

The Graduate School *at the University of Texas at Austin is an active community of diverse scholars in over one hundred academic programs dedicated to excellence in original research, teaching, creative expression, and intellectual leadership. Using our extensive resources and talents, we cultivate individuals who work together to bring knowledge, innovation, and best practices to meet the great and small challenges of our time.*

The data presented in this report supports the claim that the Physics Graduate Program aligns with the mission statement of the University of Texas at Austin.

Our program's graduates, with its even mix of US nationals and foreign students, are pushing the frontiers of physics around the world. Long term, approximately 10% of our recent (<10 years) graduates are employed as university professors, 18% are working in national labs, 22% are working in the private sector, and 40% are working at universities in non-faculty positions. The permanence of these latter positions is unknown. For these and other graduates, we do not have enough longitudinal data to assess their long term success. Following the lead of the College of Natural Sciences, and the APS graduate report, the department is embarking in a review of the curriculum program to assess is adequacy to the needs of the 21st century and to the graduates who are not finding employment in academics/national labs. The outcome of this review will strengthen the practice of excellence in our program.

[E] Program Curriculum and Duration in Comparison to Peer Programs.

In the table below we compare our curriculum with those of the University of Maryland at College Park (UMCP), University of Illinois at Urbana-Champaign (UIUC), University of Michigan at Ann Arbor (UMAA) and University of Wisconsin at Madison (UWM).

	UMCP	UIUC	UT Austin	UMAA	UWM
Course Requirements	6 credits & No core	24 credits & core	18 credits & core	30 credits & core	6 credits & core
Written Qualifier	Yes	Yes	No	Yes	Yes
Preliminary Research Presentation	Yes	Yes	Yes	Yes	Yes
Submit a Scholarly Paper to Advance to Candidacy	Yes	No	No	No	No
Annual Progress Report	No	No	No	Yes	No
Minimum GPA	Yes (B)	?	Yes (B)	Yes (B)	?
Write/defend an original dissertation	Yes	Yes	Yes	Yes	Yes

[F] Program Facilities and Equipment.

Modern facilities for graduate study and research include a large-scale cryogenic laboratory; nuclear magnetic and electron paramagnetic resonance laboratories; extensive facilities for tunneling and force microscopy and nanostructure characterization, SQUID magnetometry, and electron spectroscopy; well-equipped laboratories in optical spectroscopy, quantum optics, femto-second spectroscopy and diagnostics, and electron-atom and surface scattering; and facilities including a table-top 100-terawatt laser for strong-field physics studies for turbulent flow and nonlinear dynamics experiments and two petawatt lasers (one Ti-sapphire providing 30J in 30fs and another glass laser at 200J in 150fs).

Plasma physics experiments are conducted at the major national tokamaks in Boston and San Diego and on the local machine, the Helimak. Experiments in high-energy heavy ion nuclear and particle physics are conducted at large accelerator facilities such as Brookhaven National Laboratory (New York), CERN (Switzerland), Fermi National Laboratory (Illinois), and Germany's Deutsches Electron Synchrotron.

Theoretical work in plasma physics, condensed matter physics, acoustics, nonlinear dynamics, relativity, astrophysics, statistical mechanics, and particle theory is conducted within the Department of Physics.

Students have access to excellent computer and library facilities, including supercomputers at the Texas Advanced Computing Center.

The Department maintains and staffs a large-scale machine shop, student workshop, low-temperature and high-vacuum shop (including a helium liquefier), and an electronics design and fabrication shop.

The Physics Machine Shop provides support for faculty and students when machined and welded items are needed. The shop includes three programmable CNC milling machines, one including programmable tool selection. Recently we added a programmable EDM machine which includes programmable part selection. The shop also includes standard lathes of different sizes, pneumatic shear, and several standard milling machines with laser readouts. The Machine Shop has a staff of 9 experts with the capability to produce almost any machineable item for materials such as stainless, copper, brass, aluminum and plastics.

[G] Program Finance and Resources

Separately Budgeted Research Expenditures by Source of Support
Department of Physics, The University of Texas at Austin, June 2016–May 2017

Source of Support	*Departmental Research Funding*
Federal Government	$10,813,208
State/Local Government	$1,924,560
Non-Profit Organizations	$1,082,765
Business & Industry	$0
Other	$1,531,278
Total	$15,351,811

Separately Budgeted Research Expenditures by Research Specialty
Department of Physics, The University of Texas at Austin, June 2016–May 2017

Research Specialty	*No. of Grants*	*Expenditures*
Atomic, Molecular, & Optical Physics	22	$742,377
Biophysics	3	$81,395
Condensed Matter Physics	46	$3,092,125
Cosmology & String Theory	12	$1,209,504
Nonlinear Dynamics	4	$270,509
Relativistic Heavy Ion Physics	1	$17,792
High Energy experiment	18	$2,187,451
Physics and Other Science Education	4	$445,740
High Energy-Density Science	18	$9,931,700
Plasma and Fusion	35	$3,272,819
Statistical & Thermal Physics	3	$100,399
Total	149	$15,351,811

[H] Program Administration.

Mark J. T. Smith, Senior Vice Provost and Dean of Graduate Studies.
Jack L. Ritchie, Physics Department Chair.
Sonia Paban, Physics Graduate Studies Committee Chair.
John W. Keto, Physics Graduate Advisor.

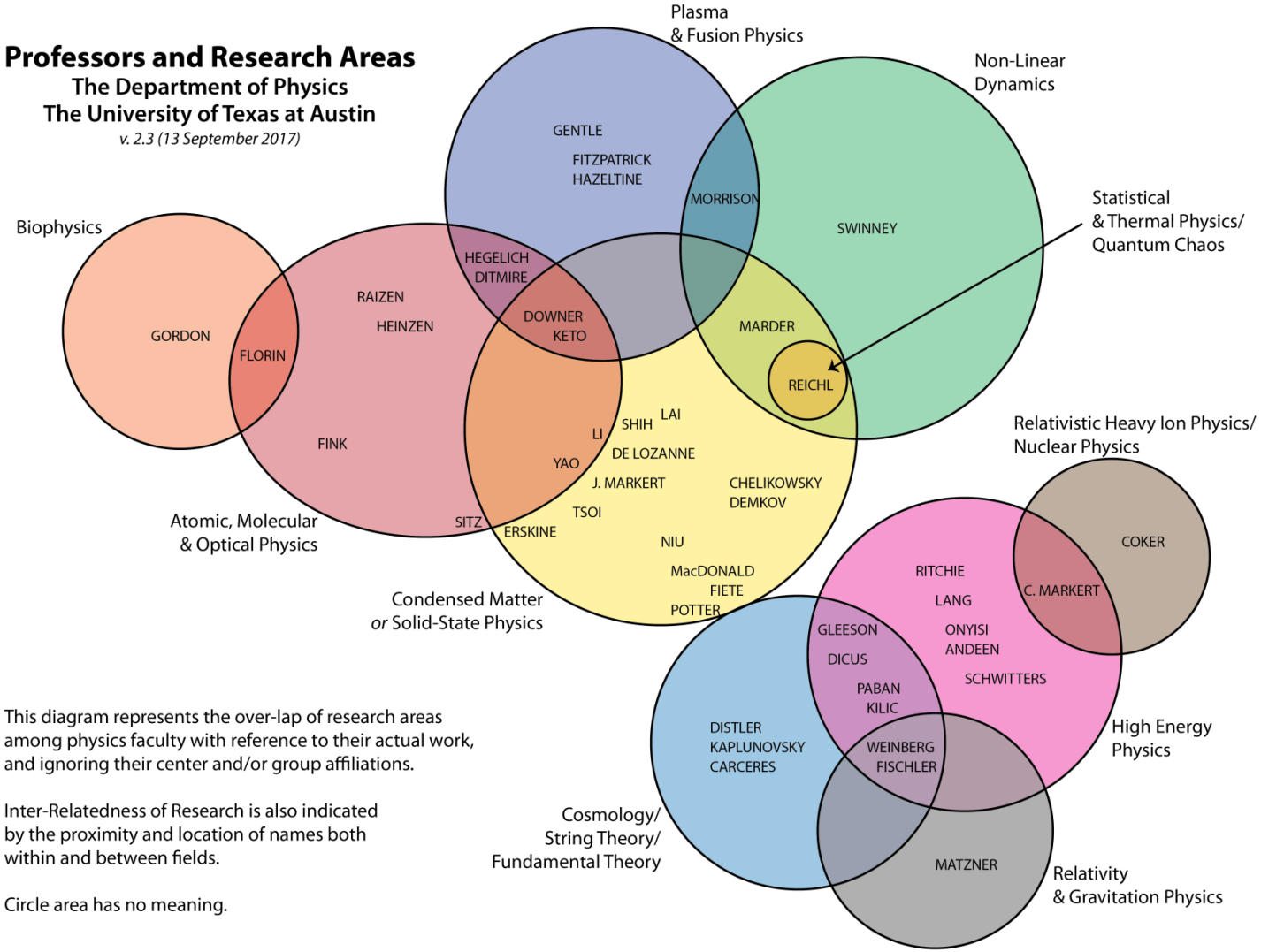
The administration of the Graduate School is the responsibility of the Senior Vice Provost and Dean of Graduate Studies. Each academic area that offers a graduate degree has a Graduate Studies Committee, a group consisting of all assistant, associate, and full professors who are active in that graduate degree program. The Graduate Studies Committee recommends students for admission to the program, sets program-specific requirements for the graduate degrees in that area, and recommends students for admission to candidacy for degrees. Graduate education is the responsibility of the members of Graduate Studies Committees. One member serves as the graduate adviser to register and advise all graduate students, to maintain records, and to represent the Graduate School in matters pertaining to graduate work in that area.

[I] Faculty Qualifications (2016).

Faculty Member Name	Faculty Member EID	Highest Degree Earned	Awarding Institution	Qualifications
DE LOZANNE, ALEX	adl777	PhD	Stanford University	CIP Valid for Dept
DEMKOV, ALEXANDER A	ad3556	PhD	Arizona State University Main	CIP Valid for Dept
MACDONALD, ALLAN H	ahmd	PhD	University of Toronto	Not Listed
NEITZKE, ANDREW M	an7269	PhD	Harvard University	Not Listed
BANERJEE, SANJAY K	banerjee	PhD	University of Illinois at Urbana-Champaign	Not Listed
BERK, HERBERT L	berkhl	PhD	Princeton University	CIP Valid for Dept
HEGELICH, BJORN	bh24986	PhD	Ludwig-Maximilians-Universitat Munchen	CIP Valid for Dept
BOHM, ARNO R	bohmar	PhD	Philipps-University of Marburg	CIP Valid for Dept
BREIZMAN, BORIS	breizman	PhD	Budker Institute of Nuclear Physics	CIP Valid for Dept
KILIC, CAN	ck9957	PhD	Harvard University	CIP Valid for Dept
MARKERT, CHRISTINA	cm28928	PhD	Johann Wolfgang Goethe University	CIP Valid for Dept
COKER, WILLIAM R	cokerwr	PhD	University of Georgia	CIP Valid for Dept
FREED, DANIEL S	dafr	PhD	University of California-Berkeley	Not Listed
DICUS, DUANE A	dicusda	PhD	University of California-Los Angeles	CIP Valid for Dept
DISTLER, JACQUES	distlerj	PhD	Harvard University	CIP Valid for Dept
HEINZEN, DANIEL J	djh618	PhD	Massachusetts Institute of Technology	CIP Valid for Dept
DOWNER, MICHAEL W	downermw	PhD	Harvard University	CIP Valid for Dept
THIRUMALAI, DEVARAJAN	dt6497	PhD	University of Minnesota-Twin Cities	Not Listed
FLORIN, ERNST-LUDWIG	ef465	PhD	Technischen Universitat Munchen/Munich	CIP Valid for Dept
ERSKINE, JAMES L	ember65	PhD	University of Washington - Seattle	CIP Valid for Dept
FIETE, GREGORY A	fietega	PhD	Harvard University	CIP Valid for Dept
WAELBROECK,	flw1830	PhD	University of Texas at Austin	CIP Valid for Dept

FRANCOIS				
GENTLE, KENNETH W	gentlekw	PhD	Massachusetts Institute of Technology	CIP Valid for Dept
GLEESON, AUSTIN M	gleeson	PhD	University of Pennsylvania	CIP Valid for Dept
GOODENOUGH, JOHN B	gooden	PhD	University of Chicago	Not Listed
SITZ, GREG O	gositz	PhD	Stanford University	CIP Valid for Dept
SHVETS, GENNADY	gs923	PhD	Massachusetts Institute of Technology	CIP Valid for Dept
SWINNEY, HARRY L	harryls	PhD	Johns Hopkins University	CIP Valid for Dept
HAZELTINE, RICHARD D	haze	PhD	University of Michigan-Ann Arbor	CIP Valid for Dept
HOFFMANN, GERALD W	hoffmann	PhD	University of California-Los Angeles	CIP Valid for Dept
HAMILTON, MARK F	holyoke	PhD	Pennsylvania State University Main Campus	Not Listed
HO, PAUL S	hops	PhD	Rensselaer Polytechnic Institute	Not Listed
FIETE, ILA P	ipf62	PhD	Harvard University	Not Listed
WHEELER, JOHN C	jcw43	PhD	University of Colorado at Boulder	Not Listed
RITCHIE, JACK L	jlr595	PhD	University of Rochester	CIP Valid for Dept
MARKERT, JOHN T	jmarkert	PhD	Cornell University	CIP Valid for Dept
CHELIKOWSKY, JAMES R	jrc2235	PhD	University of California-Berkeley	CIP Valid for Dept
TURNER, JACK S	jsturner	PhD	Indiana University at Bloomington	CIP Valid for Dept
LANG, KAROL	karolang	PhD	University of Rochester	CIP Valid for Dept
KETO, JOHN W	ketojw	PhD	University of Wisconsin-Madison	CIP Valid for Dept
LAI, KEJI	kl25598	PhD	Princeton University	Skill or Proficiency
KOCH, HANS A	koch	PhD	University of Geneva	Not Listed
MAHAJAN, SWADESH M	mahajan	PhD	University of Maryland College Park	CIP Valid for Dept
MARDER, MICHAEL P	marder	PhD	University of California-Santa Barbara	CIP Valid for Dept
FINK, MANFRED	mfink	PhD	Universitat Friedericiana Karlsruhe	Not Listed
MILOSAVLJEVIC, MILOS	mm42983	PhD	Rutgers the State University of New Jersey New Bru	Not Listed
MOON, TESSIE J	moontj	PhD	University of Illinois at Urbana-Champaign	Not Listed
TSOI, MAXIM	mt845	PhD	Universitat Konstanz	CIP Valid for Dept

NIU, QIAN	niuq	PhD	University of Washington - Seattle	CIP Valid for Dept
PABAN, SONIA	pabans	PhD	University of Barcelona	CIP Valid for Dept
MORRISON, PHILIP J	philmo	PhD	University of California-San Diego	CIP Valid for Dept
ONYISI, PETER	po3283	PhD	Cornell University	CIP Valid for Dept
RADIN, CHARLES L	radin	PhD	University of Rochester	Not Listed
RAIZEN, MARK G	raizenmg	PhD	University of Texas at Austin	CIP Valid for Dept
MATZNER, RICHARD A	ram236	PhD	University of Maryland College Park	CIP Valid for Dept
REICHL, LINDA E	reichlle	PhD	University of Denver	CIP Valid for Dept
FITZPATRICK, RICHARD	rfitzp	PhD	University of Sussex	CIP Valid for Dept
SCHWITTERS, ROY F	rfs	PhD	Massachusetts Institute of Technology	CIP Valid for Dept
ORBACH, RAYMOND LEE	ro4725	PhD	University of California-Berkeley	CIP Valid for Dept
SHAPIRO, PAUL R	shapirop	PhD	Harvard University	Not Listed
SHIH, CHIH-KANG	shihc1	PhD	Stanford University	CIP Valid for Dept
DITMIRE, TODD	tditmire	PhD	University of California-Davis	Skill or Proficiency, Teaching Excellence
LANDSBERGER, SHELDON	u235	PhD	University of Toronto	Not Listed
GORDON, VERNITA	vg5534	PhD	Harvard University	CIP Valid for Dept
WEINBERG, STEVEN	vineyard	PhD	Princeton University	CIP Valid for Dept
KAPLUNOVSKY, VADIM	vsk1958	PhD	Tel Aviv University	CIP Valid for Dept
FISCHLER, WILLY	w52288	PhD	Vrije Universiteit Brussel	CIP Valid for Dept
LI, XIAOQIN E	xel55	PhD	University of Michigan-Ann Arbor	CIP Valid for Dept
YAO, ZHEN	yaoz2	PhD	Harvard University	CIP Valid for Dept
Total Faculty Count				



This diagram represents the over-lap of research areas among physics faculty with reference to their actual work, and ignoring their center and/or group affiliations.

Inter-Relatedness of Research is also indicated by the proximity and location of names both within and between fields.

Circle area has no meaning.

THE CURRENT GRADUATE CURRICULUM DIVIDED INTO "TRACKS" SCHEMATICALLY, THE DEPARTMENT OF PHYSICS, UT AUSTIN

FIELD OF STUDY	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5	
	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
					QUALIFIER					
AMO	CORE	CORE	CORE	CORE		LASERS, 1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	TEACH/PIZZA	AMO	390	NL OPTICS	390					
[EMP]	[TA/RA]	[TA/RA]	[TA/RA]	[TA/RA]	[TA/RA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]
CONDENSED MATTER	QM	CORE	CORE	CORE		MANY-BODY, 1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	TEACH/PIZZA	SOLID-STATE I	SOLID-STATE II	390	390					
[EMP]	[TA]	[TA]	[TA]	[TA]	[TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]
COSMOLOGY/ STRINGS (Entry A)	QM	CORE	CORE	CORE	390	1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	QFT I	STRINGS I	STRINGS II	QFT II						
	TEACH/PIZZA									
COSMOLOGY/ STRINGS (Entry B)	QM	CORE	CORE	CORE		1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	QFT I	QFT II		STRINGS I	STRINGS II					
[EMP]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]
PARTICLE/ NULEAR EXP.	QM	CORE	CORE	CORE		2 IN-FIELD ADV, 1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	TEACH/PIZZA		QFT I	390	390					
[EMP]	[TA]	[TA]	[TA]	[TA]	[TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]
PLASMA/ FUSION	EM	CORE	CORE	CORE		NLD or FLUIDS, 1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	TEACH/PIZZA	PLASMA I (FUSION)[1]	PLASMA II (SHAPIRO)	390	390					
[EMP]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA/RA]	[TA/RA]	[TA/RA]	[TA/RA]	[TA/RA]
BIOPHYSICS/ NON-LINEAR	CORE	CORE	CORE	CORE		BIO II(?), 1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	TEACH/PIZZA	NLD/FLUIDS	BIO I	390	390					
[EMP]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]	[TA]
UFLP[2]	EM	CORE	CORE	CORE		LASERS, 1 OUT-OF-FIELD ADV, 2 OUT-OF-DEPT, DISSERTATION				
	TEACH/PIZZA	PLASMA I (LASER)	PLASMA II (LASER)	390	390					
			NL OPTICS							
[EMP]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA/TA]	[RA]	[RA]	[RA]	[RA]	[RA]

[1]Plasma I/II will be taught even years: Plasma I (Fusion)/Plasma II (Shapiro), odd years: Plasma I (Hegelich)/Plasma II (Ditmire).
[2]Ultrafast Laser Plasma (or High Energy-Density Physics).

Placement Information, 2001–2017
Department of Physics
The University of Texas at Austin

Legend: P-F=Plasma/Fusion; R=Relativity & Gravitation; Atomic, Molecular, and Optical Physics; HE=High Energy; N=Nuclear & RHIC; NLD=NonLinear Dynamics; BIO=Biophysics; CM=Condensed Matter; ST=Statistical Mechanics & Thermodynamics; TH=High Energy Theory (Strings &c.); PT=Particle & Field Theory; and COS=Cosmology.

Selected universities where our Ph.D.s are teaching (and their fields):

Arizona State University (CM)
Bergische Universität Wuppertal (NLD)
Berry College (ST)
Bowdoin College (PT)
Brigham Young University (R)
Cambridge University (BIO)
Colgate University (TH)
College of William and Mary (HE[x2], CM)
Georgia Institute of Technology (NLD, TH[x2])
Göteborgs universitet (AMO)
IIT—Hyderabad (CM)
Indiana University [South Bend] (TH[x2])
Institut Teknologi [Bandung, Indonesia] (R)
Kobe University (PT)
Lawrence University (NLD)
Lehigh University (TH)
Loyola University, Chicago (NLD, TH)
McMaster University (TH)
New York University (TH)
Ohio Wesleyan University (P-F)
Peking University (CM, AMO)
Pennsylvania State University (TH)
Rice University (PT, ST)
Rochester Institute of Technology (TH)
Rutgers University (TH)
St. Edwards University (TH)
Syracuse University (NLD, TH)
Tata Institute, India (P-F)
Technische Universität [Wien, Austria] (TH)
Texas Technological University (CM)
UNICAMP [Brazil] (R)
Universidad de Chile [Santiago] (R)
Università del Salento [Lecce, Italy] (R)
Universitet i Oslo (TH)
University College, Dublin (TH)
University of British Columbia, Vancouver (TH[x2])
University of California, San Diego (TH[x2])
University of California, Santa Barbara (TH)
University of Cape Town (AMO/P-F)
University of Colorado, Boulder (AMO)
University of Helsinki (R)
University of Houston (TH)
University of Illinois, Urbana-Champaign (TH[x2])
University of Malaya (PT)
University of Maryland, College Park (TH)
University of Massachusetts, Amherst (TH)
University of New Hampshire (TH)
University of Oxford (TH)
University of Pittsburgh (TH)
University of Science & Technology of China (CM)
University of Southern Florida (CM)
University of Texas, San Antonio (TH)
University of Virginia, Charlottesville (TH)
University of Washington (TH)
Uppsala University (P-F)
Vanderbilt University (TH)
Virginia Tech (NLD/P-F, TH)
Washington State University (CM/AMO)
Wayne State University (ST)

Selected universities where our Ph.D.s are post-docs. (and their fields):

Academia Sinica [Taiwan] (NLD)
AICES, Rheinisch-Westfälische Technische Hochschule Aachen (TH)
Boston University (BIO)
Cambridge University (CM)
Colorado School of Mines (AMO)
College of William and Mary (ST)
Cornell University (CM[x2], AMO[x2], TH[x2])
Dartmouth University (P-F)
École supérieure de physique et de chimie industrielles de la ville de Paris (NLD)
Feder
Florida International University (ST)
Georgetown University (CM)
Georgia Institute of Technology (CM)
Harvard University (PT)
Indiana University (ST)
Indian Institute of Technology, Bangalore (TH)
Louisiana State University (R)
Ludwig-Maximilians-Universität München (COS)
Massachusetts Institute of Technology (P-F, NLD)
McGill University [Canada] (NLD, CM[x2])
Mississippi State University (ST)
National University of Signapore (PT)
New York University (NLD/P-F)
Ohio State University (CM)
Pennsylvania State University (R)
Princeton University (NLD)
Radboud Universiteit Nijmegan (TH)
Rice University (TH)
Ruprecht-Karls-Universität Heidelberg (AMO)
Rutgers University (TH[x3])
Stanford University (TH, AMO[x2])

Temple University (ST)
Texas State University (P-F)
UNA de México, Cuernavaca (ST)
Universidad de Chile (P-F)
Universidade Federal do Rio de Janeiro (TH[x2])
Universidade de Lisboa (ST)
Universität Leipzig (BIO[x2])
Universität Hamburg (CM)
Universität Stuttgart (AMO)
Universität Würzburg (TH[x2])
Universiteit van Amsterdam (TH)
Université libre de Bruxelles (TH)
Université Pierre et Marie Curie, Paris 6 (ST)
Universiteit Leiden (AMO)
University College, London (HE[x2], ST)
University of Arkansas (CM)
University of British Columbia (CM)
University of California, Berkeley (CM[x2], NLD[x2])
University of California, San Diego (TH[x2], CM)
University of California, Santa Cruz (TH)
University of Chicago (P-F)
University of Colorado, Boulder (P-F, HE, CM)
University of Hawaii (TH)
University of Illinois, Urbana-Champaign (CM)
University of Maryland (CM[x3], NLD[x2], CM/AMO, TH)
University of Michigan (ST[x2], TH)
University of Minnesota (ST, TH)
University of Nebraska (CM)
University of New Hampshire (P-F)
University of New Mexico (P-F, PT)
University of North Carolina, Chapel Hill (TH, P-F)
University of Pennsylvania (HE)
University of Rochester (P-F)
University of San Francisco (ST)
University of Southampton (R)
University of Wisconsin (P-F[x2], N)
University of Toronto (P-F[x2], ST[x2])
Vanderbilt University (AMO)
Wilhelm-Leibniz-Universität (AMO)
Yale University (TH[x3], R)

Selected national laboratories and institutes where our Ph.D.s are post-docs. and staff members (and their fields):

APCTP [Pohang, South Korea] (TH)
Applied Research Laboratories [Austin] (TH)
Bethe Center, Universität Bonn (TH)
Brookhaven National Laboratory (CM[x2], N, HE)
Carnegie Institute (P-F/AMO)
CNRS [Orsay, France] (TH)
Centro de Física do Porto [Portugal] (TH)
Centro de Investigaciones en Optica [Leon, Mexico] (AMO[x2])
CITA [Toronto] (TH)
Congressional Research Service [Washington, DC] (TH)
DESY Theory + Math [Hamburg] (TH)
Fermi National Accelerator Laboratory (HE[x2])
ICTP [Trieste] (TH)
ICTP/IFT [São Paulo] (TH)
Instituto Potosino de Investigación Científica y Tecnólogica (AMO)
Institutt for forsvarsstudier (AMO)
Korea Advanced Institute of Science & Technology (CM)
Laboratoire de Physique Théorique-ENS, Paris (TH)
Lawrence Berkeley National Laboratory (P-F/AMO[x3])
Lawrence Livermore National Laboratory (P-F/AMO, CM)
Los Alamos National Laboratory (P-F[x5], AMO[x5], N, HE[x2], CM)
LPTENS [Paris] (TH)
LUTH Observatoire de Paris [Meudon, France] (R)
Max-Planck-Institut für Physik [München] (TH)
Max-Planck-Institüt für Physik Komplexer Systeme [Dresden] (ST[x2], CM/AMO)
Max-Planck-Institüt für Plasmaphysik [Greifswald] (P-F[x2])
NASA/Goddard Space Flight Center (P-F)
National Institute of Informatics [Japan] (ST)
National Institute of Standards and Technology (CM[x7], P-F, AMOx2)
National Research Council [Canada] (P-F)
Naval Research Laboratory, Washington DC (P-F[x2])
Oak Ridge National Laboratory (CM[x4], TH)
Perimeter Institute for Theoretical Physics (R, TH)
Rheinisch-Westfälische Technische Hochschule Aachen (TH)
Sandia National Laboratories (NLD[x2], P-F/AMO, TH)
Santa Fe Institute (TH)
Scuola Internazionale Superiore di Studi Avanzati [Italy] (TH)f
SLAC National Accelerator Laboratory (P-F/AMO[x2], TH)
S.N. Bose National Centre for Basic Science [India] (ST)
U.S. Naval Observatory (AMO)
Woods Hole Oceanographic Institution (P-F)

Selected private sector placements:

Aerius Photonics
The Aerospace Corporation
Amazon.com
AMD
Applied Research Associates [Santa Barbara]
Atonometrics, Inc.
BAE Optical
Bloomberg
Boston Scientific
Cellixis, Inc.
Citigroup Global Markets
Clockwork, Solutions, Inc.
Communications Engineering, L.L.C.
COMSOL, Inc.
Credit Suisse [Tokyo]
Cypress Semiconductors
Digital Optics International, L.L.C.
Evil Mad Scientist Laboratories
ExxonMobil
Freescale Semiconductor
General Dynamics
Go Figure [CEO, ed. software co.; Boulder]
Goldman Sachs
Goldstein & Vowell
IBM
Insight Data Science [NJ]
Intel Corporation
IT People Power GmbH [Kirchberg, Germany]
KEK:Sokendai, Tsukuba [Ibaraki, Japan]
Maxwell Analytics [Austin]
Microsoft
MITRE Corporation
Mitsubishi UFJ Securities [Tokyo]
Molecular Imprints
Morgan Stanley [Exec Dir.]
Morgan Stanley Smith Barney [VP]
National Instruments
OneWestBank
Parexel International
Pipeline Financial Group [NYC; Research Dir.]
Raytheon Corporation
RGM Advisors
Samsung
Saxet Surface Science
Seagate
Sematech
Shell Research
Shell Trading Company
SRI International
STMicroelectronics [Lyon, France]
UBS Securities [Australia]
Veritas Geophysical Corporation [Houston]
Wuhan Telecomunication Devices Co., Ltd. [Wuhan,

Timothy Andeen

Education

Gustavus Adolphus College, St. Peter, MN, B.A., 2001
Northwestern University, Evanston, IL, Ph.D., 2008

Employment History

Fellowship, CERN, Geneva, Switzerland, 2008-2010
Postdoctoral Fellow, Columbia University, New York, NY, 2010-2015
Assistant Professor, University of Texas at Austin, Austin, TX, 2015- present

Honors

CERN Fellowship 2008-2010

Interests

Tim Andeen's research is in the area of experimental particle physics. He uses the Large Hadron Collider at CERN in Geneva, Switzerland to search for new physics beyond the Standard Model with the ATLAS detector. New theories are needed to explain electroweak symmetry breaking and provide candidates for dark matter. The first evidence for these theories may be new particles observed in the ATLAS detector. Vector-like partners of the Standard Model quarks are a promising proposal for these new particles and Andeen is searching for their decay into distinctive signatures involving top quarks and Higgs bosons. Over the next five years Andeen will continue to focus on the ATLAS Experiment. He is committing to ATLAS through a significant contribution to the upgrades of the detector. By collaborating with an electrical engineering professor at UT Austin he is designing and building a novel, radiation-tolerant analog-to-digital converter to read out the Liquid Argon Calorimeters' 182,000 channels of the precise, high speed electronics. This will improve the electron and photon measurements of the experiment in 2026 and beyond, and will make possible continued searches for (and measurements of) new particles.

Boris N. Breizman

Education

1978	**Doctor of Science in Physics and Mathematics** (Budker Institute of Nuclear Physics, Novosibirsk, Russia)
1971	**Candidate of Science in Physics and Mathematics** (Budker Institute of Nuclear Physics, Novosibirsk, Russia)
1968	**Engineer-Physicist with Honors** (Moscow Institute of Physics and Technology)

Employment History

2011 – present	Research Professor, UT Austin
2003 - 2011	Senior Research Scientist, Institute for Fusion Studies, UT Austin
1993 - 2003	Research Scientist, Institute for Fusion Studies, UT Austin
1992 - 1993	Senior Reseach Fellow, Institute for Fusion Studies, UT Austin
1986 - 1992	Leading Scientist, Budker Institute of Nuclear Physics, Russia
1981 - 1992	Professor, Novosibirsk State University, Russia
1974 - 1981	Associate Professor, Novosibirsk State University, Russia
1972 - 1986	Senior Scientist, Budker Institute of Nuclear Physics, Russia
1971 - 1972	Junior Scientist, Budker Institute of Nuclear Physics, Russia
1968 – 1974	Assistant Professor, Novosibirsk State University, Russia

Honors

Ernst Mach Honorary Medal for Merit in the Physical Sciences, Czech Republic Academy of Sciences (1998).
Rotary National Award for Space Achievement, Stellar Award to the VASIMR project team (2000).
Fellow, American Physical Society (2001).

Interests

Boris Breizman is an expert in theoretical plasma physics. His research work covers linear and nonlinear collective phenomena with applications to magnetic fusion, laser-plasma interactions, beam physics, space plasma, and plasma-based propulsion. His work is largely motivated by experimental challenges and aimed at developing first-principle analytical models that provide guidance for experiments and verification options for numerical simulations. After joining the University of Texas in 1992, he has made significant contributions to three important areas: wave-particle interaction in magnetically confined plasma, plasma propulsion project at NASA, and physics of laser-irradiated clusters. He is a member of the ITER Scientist Fellow group, a member of the International Tokamak Physics Activity, and a Principal Investigator for the Simulation Center for Runaway Electron Avoidance and Mitigation, a collaborative center focused on this critical topic for burning plasmas.

Elena Caceres

Education

Ph.D. in Physics, The University of Texas at Austin 1996
B.S. in Physics Universidad Catolica del Peru 1989

Employment History

2005-present: Professor, Facultad de Ciencias, Universidad de Colima, Colima, Mexico.
2011-present: Adjunct Professor, Department of Physics, University of Texas at Austin.
2002-2004: Researcher, CINVESTAV, Department of Physics, Mexico City, Mexico.
2002: Visiting Scientist. Dept. of Physics, Brown University, Providence, Rhode Island.
1999-2001: Postdoctoral Fellow. High Energy Section, International Center for Theoretical Physics (ICTP), Trieste, Italy.
1996-1999: Postdoctoral Fellow. Department of Physics, University of California at Los Angeles (UCLA), Los Angeles, California, U.S.A.

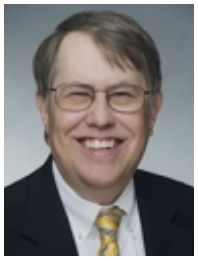
Honors

Member of the Mexican Academy of Sciences since 2010.
2014 Woman of the Year Award in Science awarded by the Colima State Senate.
S.N.I. level II. Sistema Nacional de Investigadores (SNI) is a Mexico wide researcher evaluation in all areas of Science and Humanities. Level II is one level below the highest.
Teaching Award, Department of Physics and Mathematics, University of Colima, 2007.

Interests

Elena Caceres's research interests lie in the area of string theory and quantum gravity. Specifically, for several years, she has worked on different aspects of holography also known as gauge/ gravity
duality or Anti de Sitter / Conformal Field Theory duality. Her current research focuses on the relationship between quantum information constructs and holography and the insights they provide
into the fundamental nature of spacetime. She plans to keep working in this exciting area for the next several years. Caceres is also passionate about teaching for diversity and science outreach.

James R. Chelikowsky



Education

Doctor of Philosophy in Physics, University of California at Berkeley, 1975
Bachelor of Science in Physics Summa Cum Laude, Kansas State University, 1970

Employment History

2005-	W.A. "Tex" Moncrief Jr. Chair of Computational Materials, Professor in the Departments of Physics, Chemistry, and Chemical Engineering Director of the Center for Computational Materials, Institute for Computational Engineering and Sciences, University of Texas at Austin
2001-2004:	Institute of Technology Distinguished Professor, Departments of Chemical Engineering and Materials Science, and Physics, University of Minnesota
1987-2001:	Professor, Department of Chemical Engineering and Materials Science, University of Minnesota
1980-1987:	Group Head, "Theoretical Physics and Chemistry", Technical positions: Staff Physicist, Senior Staff Physicist, and Research Associate Exxon Research and Engineering Company, Annandale, NJ.
1978-1980:	Assistant Professor, Department of Physics, University of Oregon, Eugene, OR.
1976-1978:	Limited Term Member of the Technical Staff, Bell Laboratories, Murray Hill, NJ.
1975:	National Science Foundation, Postdoctoral Fellow, Department of Physics, University of California, Berkeley, CA.

Honors

Fellow: American Physical Society (1986)
Fellow: American Association for the Advancement of Science (2007)
Fellow: Materials Research Society (2011)
John Simon Guggenheim Fellow (1995)
David Turnbull Lectureship Award, Materials Research Society (2001)
David Adler Lectureship Award in the Field of Materials Physics, American Physical Society (2006)
Outstanding Referee for the American Physical Society (2008)
Aneesur Rahman Prize in Computational Physics, American Physical Society (2013)

Research Interests

Jim Chelikowsky's research focuses on problems in materials physics and computational materials science. His work centers on the optical and dielectric properties of semiconductors, surface and interfacial phenomena in solids, point and extended defects in electronic materials, pressure induced amorphization in silicates and disordered systems, clusters and nano-regime systems, emergent properties, diffusion and microstructure of liquids, simulations of probe microscopy, materials informatics and machine learning, and the development of high performance algorithms to predict the properties of materials.

Rory Coker

Education

B. S. Physics, University of Georgia, 1961 (Cum Laude); M.S. Physics, University of Georgia, 1964; Ph. D. Physics, University of Georgia, 1966.

Employment History

Teaching Assistant, Univ. of GA, 1964-66
Research Associate, Center for Nuclear Studies, Univ. of Texas, 1966-68
Assistant Professor, Physics Dept., Univ. of Texas, 1968 -72
Associate Professor, Physics Dept., Univ. of Texas, 1972-80
Professor, Physics Dept., Univ. of Texas, 1980 – present

Interests

Rory Coker's research program in medium energy nuclear physics wound down when the Los Alamos Meson Physics Facility was repurposed to nuclear weapons-related research. Since then, he has devoted most of his efforts toward teaching, in courses ranging from introductory surveys for non-majors to senior-level courses for physics majors, and some graduate courses.

One thorn in the side of our department originates from the courses offered to students in health-professions-related majors. The courses are usually required, and the students must make a grade of C or better. They find the courses difficult, and often blame the instructor, usually resulting in poor teaching evaluations. For the past year, Coker has experimented with approaches that maintain the traditional course structure of classroom lectures, regular homework, and regular examinations, but hopefully do a better job of evaluating and rewarding good student performance, without grade inflation. So far, results have been promising, as measured by the overall class average.

Alex De Lozanne

Education

Purdue University 1972-76, B. S. in Physics (Honors).
Stanford University 1976-82, Ph. D. in Physics.

Employment History

1973-76: Computer programmer, Purdue University.
1976-81: Teaching Assistant, Head Teaching Assistant, Acting Instructor, Stanford U.
1978-82: Research Assistant, Stanford University
1983-84: Lecturer, Stanford University
1982-85: Chodorow Fellow (Junior Faculty), Stanford University
1985-90: Assistant Professor, University of Texas
1990-96: Associate Professor, University of Texas
1996-present: Professor, University of Texas

Honors

1975: R. W. King Award, Purdue University
1975: Bachelor's Degree with Highest Distinction
1975: Phi Beta Kappa, Phi Kappa Phi, Sigma Pi Sigma
1976-80: Danforth Fellow
1981: IBM Fellow
1982-85: Chodorow Fellow, Stanford University
1986: Presidential Young Investigator Award
1986: IBM Faculty Development Award
1987-88: Jane and Roland Blumberg Centennial Fellowship in Physics
1990-91: Jane and Roland Blumberg Centennial Fellowship in Physics
2014: Fellow, American Physical Society

Interests

Alex de Lozanne is interested in studying novel magnetic and superconducting materials by using scanned probe techniques that operate at low temperatures and in high magnetic fields. These techniques are designed and built by his group in order to achieve special performance characteristics. Recent examples of samples studied include manganites, magnetite, lanthanum cobaltate, uranium manganese germanium, and high temperature superconductors.

Alexander Demkov

Education

Moscow Steel and Alloys Institute	Electronic Materials	Diploma, 1986
Arizona State University (Tempe, AZ)	Physics	Ph.D., 1995
Postdoctoral Associate, (Tempe, AZ)	Physics	1995-1997

Employment History

Professor of Physics	University of Texas at Austin	2012-present
Assoc. Prof. of Physics	University of Texas at Austin	2008-2012
Assist. Prof. of Physics	University of Texas at Austin	2005-2008
Adjunct Prof. of Physics	Arizona State University	2002-2008
Principal Staff Scientist	Motorola SPS, (Austin)	2003–2005
Principal Staff Scientist	Motorola Labs, (Tempe)	2000–2003
Senior Staff Scientist	Motorola SPS, (Mesa)	1997–2000
Research Associate	Arizona State University	1995-1997
Teaching Assistant	Arizona State University	1990-1995
Member of Technical Staff	Lebedev Physical Institute	1986-1990

Honors

NSF CAREER Award (2006)
Fellow of the American Physical Society (2006)
IBM Faculty Award (2011)
Senior Member of IEEE (2014)
AVS Excellence in Leadership Award (2014)

Interests

Alex Demkov's research spans a broad range of topics in theoretical and experimental condensed matter physics. His work is focused on understanding the properties of materials. The primary research interests include the physics of transition metal oxides, oxide heterostructures and oxide epitaxy. His current focus is on integration of electro-optically active oxides on common semiconductors for potential application is silicon photonics and neuromorphic computing.

Duane Dicus

Education

B.S. Physics, University of Washington, 1961
M.S. Physics, University of Washington, 1963
Ph.D. Physics, UCLA, 1968

Employment History

1984-	Professor, University of Texas at Austin
1991-1997	Director, Center for Particle Physics, University of Texas at Austin
1978-1984	Associate Professor, University of Texas at Austin
1973-1978	Assistant Professor, University of Texas at Austin
1971-1973	Research Associate, University of Rochester
1969-1971	Research Associate, Massachusetts Institute of Technology
1968-1969	Assistant Professor, UCLA
1963-1964	Research Physicist, The Boeing Company

Honors

Fellow, American Physical Society
University of Texas College of Natural Sciences Teaching Excellence Award, 2008

Interests

Duane Dicus' research interests are in the area of theoretical elementary particle physics, in particular, weak and electromagnetic interactions including their application to astrophysics and cosmology. Of current interest is the Higgs boson self-couplings and how they might be measured given that the LHC, even with the planned upgrades, will probably not be able to determine them. Also of interest at present are the measurements of the radius of the proton, in particular the deviation between the value as measured in hydrogen and that measured in muonic hydrogen.

Jacques Distler

Education

Ph.D. (1987), Physics, Harvard University
A.B. (1982), Physics, cum laude, Harvard University

Employment History

2001-present:	Professor, University of Texas at Austin
Spring 2001:	Visiting Fellow, ITP, UC Santa Barbara
1996-2001:	Associate Professor, University of Texas at Austin
1994-1996:	Assistant Professor, University of Texas at Austin
Spring 1993:	Visiting Fellow, ITP, UC Santa Barbara
1989-1994:	Assistant Professor, Princeton University
1987-1989:	Postdoctoral Research Associate, Cornell University

Honors

Sloan Foundation Fellow

Interests

Jacques Distler works on the formal side of high energy theory. His research interests are at the intersection between string theory, quantum field theory and mathematics. His focus, in recent years, can best be summarized as using string theory methods to study properties of quantum field theory. He works closely with members of the UT Mathematics Department, and organizes a joint pedagogical seminar, the Geometry & String Theory seminar, with Professors Dan Freed and Andrew Neitzke.

Todd Ditmire

Education

1995: Ph. D. Applied Science, University of California, Davis
Thesis: Soft X-Ray Generation in Gases with an Ultrashort Pulse Laser
1993: M. S. Applied Science, University of California, Davis
1991: B. A. in Physics and Art History, Magna Cum Laude, Harvard University

Employment History

2005-present: University of Texas at Austin, Professor of Physics
2001-2005: Associate Professor of Physics
2003-present: Director of the Center for High Energy Density Science, a DOE NNSA Stewardship Alliance Center of Excellence
2010-present: National Energetics, Inc., Austin, Texas, President and CEO
1997-2000: Lawrence Livermore National Laboratory, Livermore, CA
Project Leader for the Falcon laser project and experiments
1995-1997: Imperial College of Science, Technology and Medicine, London, UK
Postdoctoral research associate in the Laser Consortium, Physics Department
1991-1995: Lawrence Livermore National Laboratory/Dept. of Applied Science (UC Davis), Livermore, CA. Ph.D. graduate thesis research (Thesis advisor: Mike Perry)

Honors

Awarded UT College of Natural Sciences Teaching Excellence Award, 2009
Fellow of the American Physical Society 2005
Awarded the Sagamore of the Wabash award by the Governor of Indiana 1999
Cited in Who's Who

Interests

• High intensity laser technology and petawatt laser development
• High energy density and strongly coupled plasmas created with short pulse lasers
• High intensity laser interactions with atomic clusters
• Fusion in high temperature plasmas produced from intense illumination of cluster gases
• Short-pulse-laser driven radiative hydrodynamic experiments of relevance to astrophysics
• Sub-picosecond x-ray generation for probing of materials dynamics under extreme conditions
• Laser plasma interactions at relativistic intensities
• MeV x-ray generation from high intensity irradiation of solids

Michael Downer

Education
Postdoc AT&T Bell Labs, Holmdel, NJ, 1983 – 1985, C. V. Shank, supervisor
Ph.D. Harvard University, 1983, Applied Physics, N. Bloembergen, supervisor
M.A. Oxford University, Brasenose College, 1978 Physics
B.A. University of Rochester, 1976 Physics

Employment History

University Distinguished Teaching Professor U. Texas at Austin	2011-present
College of Natural Sciences Distinguished Professor U. Texas at Austin	2006-present
Jack S. Josey Professor U. Texas at Austin	1998-2000
Professor of Physics U. Texas at Austin	1997 - present
Associate Professor of Physics U. Texas at Austin	1991 - 97
Assistant Professor of Physics U. Texas at Austin	1985 - 91

Honors

Natural Sciences Council Faculty Service Award, UT-Austin	2013
Minnie Stevens Piper Foundation Outstanding Teaching Award	2012
Regents' Outstanding Teaching Award, U. Texas System	2011
Elected to Academy of Distinguished Teachers, UT-Austin	2011
Natural Sciences Council Outstanding Teaching Award, UT-Austin	2009
Dad's Association Centennial Teaching Fellowship, UT-Austin	2009
President's Associates Teaching Excellence Award, UT-Austin	2002
Teaching Excellence Award, College of Natural Sciences, UT-Austin	2001
Outstanding Graduate Teaching Award, UT-Austin	2000

Interests
Mike Downer's main area of research is intense laser-plasma and laser-solid interaction experiments. His main current interest is in developing laser- and particle-beam-driven plasma electron accelerators, and exploring their potential as future compact coherent light sources and colliders. His current and near-future experiments are visualizing and monitoring plasma-based accelerator structures, accelerating electrons to multi-GeV energies, deriving and using secondary secondary x-ray and gamma-ray radiation from these accelerators, and exploring terawatt mid-infrared lasers as drivers. Mike also supervises a parallel research program on unique optical properties of surfaces and interfaces, including semiconductor nano-structures, thin-film ferroelectrics, and organic composites.

James L. Erskine

Education

B.S. Electrical Engineering, University of Washington (1964)
M.S. Electrical Engineering, University of Washington (1966)
Ph.D. Physics, University of Washington (1973); E. A. Stern, Advisor

Employment History

Trull Centennial Professor of Physics, University of Texas (1986-present)
Associate Professor of Physics, University of Texas (1982-1986)
Assistant Professor of Physics, University of Texas (1977-1982)
Research Assistant Professor, University of Illinois (1974-1977)
Postdoctoral Associate, University of Washington (1973-1974)
Senior Engineer and Consultant, (Nuclear Weapons Effects) The Boeing Company (1967-1974)

Honors

Fellow, The American Physical Society (1987)

Interests

Jim Erskine's research is in the area of experimental solid-state physics. The research program has evolved through several subfields while seeking new research and funding opportunities. Prior research was based on the use of synchrotron radiation (spin- and angle resolved photoelectron emission studies of mostly electronic and magnetic properties of bulk and thin film epitaxial materials). The synchrotron radiation work was supported by various studies of structural and vibrational properties of epitaxial materials based on elastic and inelastic electron scattering, and magnetic properties based on magneto-optic techniques. These programs have evolved into a program that now addresses electron spin related properties of micro and nano-structured materials. Current interests involve spin-torque effects on domain-wall dynamics in nanometer scale magnetic conduits and the universal EMF generated by domain-wall motion. Some work continues using synchrotron radiation (photoelectron microscope) in collaboration with a NIST group at NSLS.

Gregory Fiete

Education
Ph.D. in Physics, Harvard University, June 2003.
A.M. in Physics, Harvard University, June 1999.
B.S. (Highest Honors) in Honors Physics, Purdue University, June 1997.

Employment History
Associate Professor of Physics (with Tenure), UT Austin, September 2013-Present
Assistant Professor of Physics, UT Austin, August 2008 - August 2013
Lee A. DuBridge Prize Fellow in Theoretical Physics, Caltech, September 2006 - August 2008
KITP, UC Santa Barbara, Postdoctoral Fellow, January 2004 - August 2006
Harvard University, Department of Physics Postdoc, June - December 2003

Honors
- Fellow, American Physical Society.
- Presidential Early Career Award in Science and Engineering (PECASE).
- DARPA Young Faculty Award (YFA).
- DARPA Director's Fellowship.
- NSF CAREER Award.
- Kavli Frontiers Fellow.
- College of Natural Sciences Teaching Excellence Award.
- Regents' Outstanding Teaching Award Finalist.
- KITP Graduate Fellow, KITP, University of California, Santa Barbara.
- Phi Beta Kappa.

Interests
Greg Fiete's research is in the area of theoretical condensed matter physics. He has broad interests in quantum many-particle systems including topological states of matter, transition metal oxides, entanglement spectra, quantum magnetism, and non-equilibrium systems. He is especially interested in finding and studying unusual phases of matter with unfamiliar and surprising properties. His research is phenomena-driven and employs a wide range of analytical and numerical theoretical techniques to deepen his understanding.

Manfred Fink

Education

Diplom in Physics, Technical University, Karlsruhe, December 1962
Ph.D., in Physics, Technical University, Karlsruhe, June 1965
Dissertation: "Electron Scattering from Rare Gases and Small Molecules"

Employment History

Professor, Physics Department, University of Texas, 1979-Present
Honorary Professor, Physics Department, University of Shanxi, Taiyuan, PRC
Associate Professor, Physics Department, University of Texas, 1972-1979
Assistant Professor, Physics Department, University of Texas, 1970-1972
Faculty Associate, Physics Department, University of Texas, 1968-1970
Postdoctoral Fellowship, Chemistry Department, Indiana University, 1966-1968
Lab Instructor, Physics Department, University Karlsruhe, 1959-1966
Chemistry Apprentice in the BASF (Badische Anilin Und Soda Fabrik) 1953-1956

Honors

Outstanding Teaching Award, University of Texas at Austin, 1997
Chair, Al V Humboldt Foundation, Texas Section, 2010
Fellow of the American Physical Society

Interests

Research currently being done in Dr. Fink's group is an effort to use atomic and molecular Physics to develop procedures which help the semiconductor industry to find the defect sites, their origin and their removal. This tool would be novel since it will use positions as detectors. This technology is particularly suitable to do the probing a variety of depth and for selected atomic species. Most of these techniques are well established and need only to be modified to accommodate the space and the availability of a monochromized intense positron beam. My group is currently setting up a facility at our Nuclear Reactor about ten miles from the department.

Willy Fischler

Education
Universite Libre de Bruxelles
Ph.D., 1976 with “la plus grande distinction”.

Employment History
University of Texas at Austin
Associate Director Theory Group 2003-
Jane and Roland Blumberg Centennial Professor in Physics 2000-
Professor of Physics 1983-2000
Marble Falls Area EMS Licensed Paramedic 2009-

Honors
1975-77 CERN Fellowship
1979-1980 Recipient of Outstanding Junior Researcher Award, DOE
1987-88 Fellow to the Jane and Roland Blumberg Centennial Professorship in Physics
Fall 1997 Dean’s Fellow
2000– Jane and Roland Blumberg Centennial Professor in Physics
2006 The College of Natural Sciences Teaching Excellence Award

Interests
Fischler’s research covers a wide spectrum of topics ranging from particle physics phenomenology, dark matter, to the AdS-CFT connection and quantum gravity including black holes and cosmology.

He continues to focus as he has in the past, on challenging question at the boundary of our knowledge in theoretical physics. This quest includes the understanding of how to merge quantum mechanics and gravity and what it implies about the physics of black holes and cosmology.

In the context of particle physics phenomenology, the continued absence of low energy signals from supersymmetry exacerbates the so called fine tuning problem which is stimulating his continued working interest.

Richard Fitzpatrick

Education

1984: M.A. in Physics, University of Cambridge, First class hons. (triple first)
1988: D.Phil. in Astronomy, University of Sussex, The Axisymmetric Pulsar Magnetosphere, supervised by Prof. L. Mestel, FRS.

Employment History

2006-present: Professor & Research Scientist, Department of Physics & Institute for Fusion Studies, University of Texas at Austin
2000-2006: Associate Professor & Research Scientist, Department of Physics & Institute for Fusion Studies, University of Texas at Austin
1994-2000: Assistant Professor & Research Scientist, Department of Physics & Institute for Fusion Studies, University of Texas at Austin
1987-1993: Senior Scientific Officer, Culham Laboratory, UK Atomic Energy Authority

Honors

Nominated for Regent's Teaching Award, 2016.
College of Natural Sciences Teaching Excellence Award, 2015.
Chairman of Graduate Recruitment Committee of Physics Department.
Fellow of American Physical Society since 2003.
Member of Royal Astronomical Society since 1988.

Interests

Richard Fitzpatrick's research interests are focused on the magnetohydrodynamical stability of toroidal magnetic confinement devices, such as tokamaks and reversed-field pinches. A particular focus of his research is the examination of the extreme sensitivity of tokamak plasmas to accidentally produced magnetic perturbations due to field-coil misalignments. Another focus is the non-linear interaction and frequency locking of magnetohydrodynamical instabilities of different helicities in toroidal plasmas. A final focus is the destabilization of magnetohydrodynamical modes in toroidal plasmas due to the finite conductivity, finite thickness, incomplete coverage, and magnetic properties, of surrounding walls.

Ernst-Ludwig Florin

Education

1995: Ph.D. in Physics, Physics Department of the Technical University of Munich Germany
1990: Diploma in Physics, Physics Department of the Technical University of Munich Germany

Employment History

2009-present: Assoc. Professor, Dept. of Physics, Center for Nonlinear Dynamics, UT-Austin
2003-2009: Asst. Professor, Department of Physics, Center for Nonlinear Dynamics, UT-Austin
1999-2003: Staff Scientist, Cell Biology & Biophysics Programme, EMBL Heidelberg, Germany
1995-1998: Postdoctoral Fellow, Cell Biophysics Programme, EMBL Heidelberg, Germany
1990-1995: Ph.D. Student, Biophysics Institute E22, Physics Dept. Technical Univ of Munich
1989-1990: Diploma Student, Biophysics Institute E22, Physics Dept. Technical Univ of Munich

Honors

2003: Nanoscience Prize, German Center of Competence in Nanoscience, sponsored by the German Ministry for Science and Technology (BMBF).
1995: Summa Cum Laude, Technical University Munich

Interests

The Florin group works on projects from single molecule biophysics to collective behavior in bacterial colonies. The development of state-of-the-art instrumentation, such as three-dimensional scanning probe microscopy, is a major part of the group's research. The use of new tools and methods provides "eyes" to discover new phenomena in biology and physics. Examples for discoveries in biology are the observation of cytoplasmic freezing in fission yeast, the first observation of intermediate steps in membrane fusion, the first observation of the deadly competition between bacterial sibling colonies, and the discovery of a new protein that acts as a species-specific toxin in the deadly competition; the latter two projects are collaborations with Swinney (Physics) and Payne (Microbiology). Concurrently, new insight is being gained into physics. The development of thermal noise imaging microscopy led to the first observation of ballistic Brownian motion in a liquid and the first measurement of the non-conservative forces in a single beam optical trap. The development of a novel type of optical trap for macromolecular complexes led to the observation of the strongest optical far-field forces reported so far. Characterizing the nonequilbrium collective swarming behavior of the bacteria (*Paenibacillus dendritiformis* T-morphotype), we found a new law for cluster size distribution in the collective motion of bacteria (together with Swinney); these results have stimulated other studies of clustering in both biological organisms and in non-biological active media.

Kenneth Gentle

Education

1962: S.B., Massachusetts Institute of Technology
1966: Ph.D., Massachusetts Institute of Technology

Employment History

1966: Instructor, Massachusetts Institute of Technology
1966: Assistant Professor of Physics, University of Texas at Austin
1970: Associate Professor of Physics, University of Texas at Austin
1976-: Professor of Physics, University of Texas at Austin

Honors

1973-75:	Alfred Sloan Fellowship
1986-88:	Josey Professor of Energy
1989:	Foreign Applied Sciences Assessment Center panel assessing the West European magnetic fusion program, writing the chapter on tokamaks.
2004:	International Scientific and Technological Cooperation Award of the People's Republic of China

Interests

Kenneth Gentle's research is in the field of experimental plasma physics, specifically in the physics of high temperature magnetized plasma in confined configurations. Such plasmas are uniquely far from thermodynamic equilibrium. The available free energy drives a dynamic state with high levels of fluctuations and strong transport. His recent experiments have explored the mechanisms that determine the non-linearly saturated fluctuations levels, which can approach 100% in many cases. This includes the nature of the different fluctuating fields -- density, temperature, potential -- as well as the resulting transport. Besides continuing this work, experiments are planned on several large confinement devices, JTEXT and EAST in China and DIII-D in San Diego, to measure particle and electron thermal energy transport coefficients.

Austin Gleeson

Education

B.S from Drexel Institute of Technology in Physics, 1960.
M.S., 1960, and a Ph.D., 1965, in Physics from the University of Pennsylvania.
His Dissertation was on Pion-Nucleon Collisions and Pion Production.

Employment History

Gleeson began his academic career at Syracuse University as a post doc in 1965. He was promoted to Assistant Professor in 1967. In 1969, he moved to the University of Texas at Austin. He was promoted to Associate Professor in 1971 and to Professor in 1977.

He has also held several administrative positions at the University of Texas. He has been an Associate Dean twice. The first was in the Graduate School in the mid 1970s and in the College of Natural Sciences from 1980 – 1985. He was Chair from 1988 to 1992 and 1995 to 1997. There were also brief periods as acting Chair in 1984 and 2009.

He also served in significant roles on important University activities such as Faculty Grievances and Intellectual Property. He was the Campus Master Planner from 1993 to 2000. He served as the Chief Scientist on the Texas contribution to the Superconducting Super Collider effort. He was Co-Director of the College of Natural Sciences Discovery Learning Project. He currently supervises the Department of Physics premier outreach program the Elementary School Traveling Physics Circus.

Honors

Gleeson has been awarded many teaching awards ranging from special Professorships in the late 1980's and early 1990's to University wide awards such as the Jean Holloway in 2008 and in 2015 was awarded Pro Bene Meritus by the College of Liberal Arts.

He has published fifty papers, about 5 in restricted journals, and has about 500 citations.

Interests

Gleeson is a field theoretician with special interests in particle and astro-particle phenomena and the foundations of quantum field theory. He is also interested in successful pedagogy and is a member of the Graduate Studies Committee on Science Education.

Vernita Gordon

Education

June 2001: A.M. Physics, Harvard University, Cambridge, MA
November 2003: Ph.D. Physics, Vanderbilt University, Nashville, TN
May 1997: B.Sc. Physics & Mathematics
Magna Cum Laude, Honors in Physics, Honors in the College of Arts and Science

Employment History

August 2010 – present: University of Texas at Austin, Assistant Professor of Physics, Center for Nonlinear Dynamics, Institute for Cell and Molecular Biology
2006-2010: Postdoctoral researcher, University of Illinois Urbana-Champaign
2003-2006: Postdoctoral researcher, University of Edinburgh

Honors

2008-2010: Postdoctoral Fellowship from the Cystic Fibrosis Foundation
2013: Robert S. Hyer Research Award. This award is given by the Texas Section of the American Physical Society to an undergraduate researcher (N. Ratnayeke) and that student's research advisor (V.D. Gordon).
2017: Nominated for President's Associate Teaching Excellence Award
My undergraduate and Ph.D. students have won multiple awards for research done under my supervision. A list is available on request.

Interests

Vernita Gordon's research is in the area of experimental biological physics. Most of her research focuses on microbiology, namely bacterial biofilms and aspects of bacterial behavior that link to biofilm development, such as surface sensing and chemotaxis. Bacterial biofilms are distinguished from free-swimming, so-called "planktonic," bacteria by physical distinctives, most notably mechanical cohesion and relatively-fixed spatial structure. Her research addresses how physical properties impact biofilm development and the course of biofilm disease, with the long-term goal of identifying physical properties that would be good targets for attacking to prevent or ameliorate biofilm disease. Present research topics, which are expected to be important themes in the Gordon group for the next four or five years, are the roles of mechanics in resistance to the immune system, the roles of mechanics in biofilm initiation, and the role of spatial structure in virulence and antibiotic resistance.

Richard D. Hazeltine

Education

1960-64 A.B. (Physics): Harvard College
1964-66 M.S. (Physics): University of Michigan
1966-68 Ph.D. (Physics): University of Michigan

Employment History

2009-2014	Chair, Department of Physics, The University of Texas at Austin (UTA)
1986-present	Professor of Physics, UTA
1991-2002	Director, Institute for Fusion Studies, UTA
1987-1988	Acting Director, Institute for Fusion Studies, UTA
1982-1986	Assistant Director, Institute for Fusion Studies, UTA
1975-1983	Research Scientist, Fusion Research Center, UTA
1971-1975	Research Scientist Associate, Fusion Research Center, UTA
1969-1971	Member, Institute for Advanced Study, Princeton
1970	Visiting Scientist, Aspen Center for Physics
1969	Research Scientist, U. S. Naval Research Lab
1968	Lecturer in Physics, University of Michigan

Honors

Hazeltine was a Councilor of the American Physical Society, Chair of the Division of Plasma Physics, Chair of the Fusion Energy Sciences Advisory Committee for DOE and a member of the Board on Physics and Astronomy of the National Research Council. Previously on the editorial boards of Physical Review and The Physics of Fluids, Hazeltine served some 8 years as an Associate Editor of Reviews of Modern Physics. He is a Fellow of the APS and of the AAAS.

Interests

As a theoretical plasma physicist, Hazeltine has worked in transport theory, plasma stability theory and nonlinear fluid modeling. His scientific interests extend from plasma confinement to such topics as nonlinear dynamics and astrophysics.

Bjorn Manuel Hegelich

Education

LANL Leadership Institute: June, 2006
Ph.D.: Ludwig-Maximilian-Universität München/Max-Planck-Institute für Quantenoptik, Müchen, December, 2002
M.Sc. (Diplom): Georg-August-Universität Göttingen/Laser-Laboratorium Göttingen, October 1998
B.Sc.(Hons): Napier University Edinburgh, July 1996
B.Sc. (Vordiplom): Universität Siegen, September 1995

Employment History

Associate Professor for Physics, University of Texas at Austin	2012-present
Visiting Professor, Chinese Academy of Sciences	2015-2016
Los Alamos National Laboratory	2003-2012
Visiting Professor, LMU Munich	2008-2010
LMU Munich & MPI für Quantenoptik	1998-2003

Honors

Jack S. Josey Fellowship (2016), UT Austin, Chair's Fellowship (2016), UT Austin, Faculty Research Fellowship, UT Austin, Chinese Academy of Sciences President's International Fellowship Initiative (2015), NNSA Defense Programs Award of Excellence (2012), LANL Laboratory Directed Research and Development Award (2010 – 2012), Center for Advanced Studies Fellowship Award, LMU Munich (2010), Excellence Initiative Fellowship Award, LMU Munich and State of Bavaria (2008 – 2009)

Interests

Dr. Hegelich's research area is the creation of Extreme Fields and their interaction with matter, resulting in high-energy particles, radiation, relativistic and high energy density plasmas and nonlinear quantum effects. The research spans the very fundamental to the very applied. On the fundamental level Dr. Hegelich's research includes the development of new nonlinear field theories for quantum effects in long range, classical potentials, especially nonlinear QED and BSM effects, the translation of these theories to massively parallel computer codes to simulate extreme laser-matter interactions and the experimental validation of these theories and simulations on the world's most powerful laser systems, including the Texas Petawatt Laser at UT.
On the applied level, Dr. Hegelich's research ranges from the development of new laser sources to create these extreme fields, and the detectors to diagnose them to the application of new laserdriven particle and light sources in material science, medical physics, energy physics, directed energy and homeland security applications.
The focus for the next 5 years lies on developing an effective field theory for nonlinear QED in ultra-strong laser potentials and its experimental validation by measuring for the first-time effects like radiation back-reactions and vacuum polarization. To this end Dr. Hegelich is developing the world's most powerful laser systems, including a high peak power laser, the future 5PW Trident-X laser and an high average power, high peak power mid-IR laser systems for applications as light and particle sources, directed energy, material science and medical physics.

Daniel Heinzen

Education

1988:	Ph. D., Physics, Massachusetts Institute of Technology. Thesis under Professor M. S. Feld: "Radiative Decay and Level Shift of an Atom in an Optical Resonator."
1981:	B.S., Physics, Massachusetts Institute of Technology
1975-77:	Augustana College, Sioux Falls, SD

Employment History

2000-present:	Professor of Physics, The University of Texas at Austin
1996-2000:	Associate Professor of Physics, The University of Texas at Austin
1991-1996:	Assistant Professor of Physics, The University of Texas at Austin
1988-1990:	Postdoctoral Research Associate, Ion Storage Group, National Institute of Standards and Technology, Boulder, CO

Honors

2000-present:	Fondren Centennial Foundation Chair in Physics, University of Texas
1999-present:	Fellow, American Physical Society
1992-1997:	National Science Foundation National Young Investigator
1991-1993:	Alfred P. Sloan Research Fellow
1988-1990:	National Research Council Postdoctoral Fellow
1981-1988:	Lester Wolfe Fellow

Interests

Ultracold Atomic Sources and Collisions
Quantum Gases and Quantum Emulation
Atomic and Molecular Physics Tests of Fundamental Symmetries

Vadim Kaplunovsky

Education

1978-1983:	Tel-Aviv University; Ph. D. in Physics; Thesis Advisor: Professor Thomas Banks
1978:	Hebrew University in Jerusalem; B. Sc. with excellence in Mathematics and Physics
1975-1077:	Leningrad State University

Employment History

2001-present:	University of Texas at Austin, Department of Physics, Professor.
1995-2001:	University of Texas at Austin, Department of Physics, Associate Professor.
1989-1995:	University of Texas at Austin, Department of Physics, Assistant Professor.
1986-1989:	Stanford University, Department of Physics, Research Associate.
1983-1986:	Princeton University, Department of Physics, Research Associate.

Interests

Vadim Kaplunovsky's research is in the area of particle theory with focus on supersymmetry and string theory.

John W Keto

Education

University of Wisconsin, Madison, Wisconsin, Ph.D. 1972
University of Michigan, Ann Arbor, Michigan, BSE 1968 with highest honors

Employment History

Graduate Advisor 2008-present.
Member, Center for High Energy Density Science, Center for Nano and Molecular Science
Associate Chair in Physics, Graduate Affairs, 2009-2014.
Professor of Physics, University of Texas at Austin, 1988-present.
Thornberry Professor for Innovative teaching 2000-2002.
Visiting Professor, Ecole Central de Lille, 2001.
Associ, Professor of Physics, University of Texas 1981-88; Asst. Prof. 1975-80.
Res. Assoc. Physics; Instructor, Elect. and Computer Eng., Rice U., Houston, TX, 1972-75.
Member Tech Staff, RCA Sarnoff Research Lab., Princeton, NJ, 1968.

Honors

Tau Beta Pi, U. of Mich. 1967; N.S.F. Fellow, U of Wisc., 1970-72; Sigma Xi, 1971; Who's-Who, S and SW, 1980; American Men of Science, 1985, Vis. Prof. and SFB fellow, U. of Kaiserlautern, Germany; Distinguished Vis. Scientist NIMC, Tscuba, Japan, 1998; Fellow of the Am. Phys. Soc., 2001; Who's-Who in Amer., 2005-present.

Research Interests

Professor Keto has published in the area of electronic excitations in superfluid helium, high-power and vacuum uv lasers, laser diagnostics, and nonlinear laser spectroscopy of atoms and molecule. His thesis work suggested the possibility of vacuum uv lasing of rare-gas excimers, and in early research he made extensive studies of state-to-state excitation transfer from excimers in rare-gases, mixtures of rare-gases, and xenon-chloride using two-photon laser spectroscopy. He made the first two-photon studies of excitons in rare-gas liquids and solids. In the area of nanoparticles (NPs), he co-invented a process for generating NPs by laser ablation of microparticles in a flowing powder aerosol. This process produces monodisperse NP size distributions ($\Delta dia/dia \sim 8\%$) with a controllable mean diameter which is scalable to high volume production. He is now investigating techniques for assembling nanostructured materials from these NPs. Professor Keto has also studied the explosion of strongly-coupled nanoplasmas produced in rare-gas clusters and metallic nanoparticles using high-intensity XUV light. Light sources have included high-harmonic XUV generation from 30 fs, 100 TW lasers and the new free-electron laser at SLAC.

Can Kilic

Education

Harvard University, Ph.D. in Theoretical High Energy Physics.
Thesis Advisor: Nima Arkani-Hamed 2006
Bogazici (Bosphorus) University, Istanbul TURKEY
B.S. in Physics 2000

Employment History

The University of Texas at Austin: Assistant Professor 2011-Present
Rutgers University: Postdoctoral Research Associate 2009-2011
The Johns Hopkins University: Postdoctoral Research Fellow 2006-2009

Honors

2017 (UT Austin) Nominated for the Regents' Outstanding Teaching Award
2016 (UT Austin) Nominated for the Regents' Outstanding Teaching Award
2015 (UT Austin) Awarded the College of Natural Sciences Teaching Excellence Award

Interests

The research of Can Kilic focuses on extensions of the Standard Model of particle physics, with an emphasis on experimental signatures. While the Standard Model has been one of the scientific triumphs of the 20th century, there are a number of questions it leaves unanswered, confirming that our understanding of nature at microscopic scales is incomplete. Two of the main drivers of research in high energy physics in the recent past have been the naturalness of the electroweak sector and the existence of dark matter. Kilic's research focuses on studying connections between the open questions in particle physics, pointing to potential novel signatures at particle colliders and in dark matter searches. Specifically, Kilic has explored: Connections between dark matter and the flavor structure of the Standard Model in the framework of Flavored Dark Matter models; Signatures at particle collider experiments for confirming the resolution of the naturalness puzzle due to a neutral twin sector; and Improving discovery prospects and the precision of mass measurements for new particles using geometric properties of phase space.

Keji Lai

Education

• Tsinghua University, China	Electrical Engineering	B.S.	2001
• Princeton University, US	Electrical Engineering	Ph.D.	2006

Employment History

• Assistant Professor: Physics, University of Texas at Austin	2012 – present
• Research scientist: Applied Physics, Stanford University	2011 – 2012
• Postdoc: Applied Physics, Stanford University	2006 – 2011

Honors

• Presidential Early Career Awards for Scientists and Engineers (PECASE)	2016
• International Union of Pure and Applied Physics (IUPAP) C10 Young Scientist Prize in the Structure and Dynamics of Condensed Matter	2015
• Department of Energy EARLY CAREER Award	2013

Interests

Keji Lai's research is in the area of experimental condensed matter physics. A common theme in his research is to explore the fundamental physics and technological applications of advanced quantum systems. This has included the study of low-dimensional materials, topological insulators, multiferroics, and strongly correlated systems by nanoscale impedance microscopy and conventional transport and optical techniques. His current focus, and the focus for the next few years, is the nanoscale photoconductivity imaging that combines impedance microscopy and high-intensity pulsed/CW laser illumination, and broadband impedance microscopy that probes the low-energy dynamics of ferroic domain walls and acoustic phenomena in piezoelectric materials.

Karol Lang

Education

1985: Ph.D., Physics, University of Rochester, Rochester, NY, USA.
1979: M.S., Physics, University of Warsaw, Warsaw, Poland.

Employment History

2001–present: Professor of Physics, The University of Texas at Austin
1997–2001: Associate Professor of Physics, The University of Texas at Austin
1991–1996: Assistant Professor of Physics, The University of Texas at Austin
1988–1991: Acting Assistant Professor of Physics, Stanford University
1986–1988: Research Associate, Department of Physics, Stanford University
1985–1986: Research Associate, Department of Physics, Univ. of Rochester
1981–1985: Research Assistant, Department of Physics, Univ. of Rochester
1979–1981: Research Physicist, Inst. for Nuclear Research, Warsaw, Poland

Honors

Fellow, American Physics Society
Co-Spokesperson, MINOS Collaboration

Interests

Karol Lang is an experimental particle physicist and faculty at the University of Texas at Austin. His research focuses on studies of neutrinos. He is involved in the neutrino program at Fermilab in the US and at the underground LSM laboratory in France.

At Fermilab, he is involved in the long baseline neutrino two-detector experiments MINOS and NO*ν*A which measure neutrino oscillations using NuMI beam. These complementary experiments have set some of the most stringent constraints on the neutrino mass splitting and mixing.

At Laboratoire Souterrain de Modane (LSM) in France, he is involved in the NEMO-3 exper- iment and its future reincarnation SuperNEMO – experiments designed to search for neutrinoless double beta decay which, if observed, would demonstrate that neutrinos are Majorana particles (i.e., that neutrinos and antineutrinos represent the same fundamental field).

Xiaoqin Elaine Li

Education

Ph.D., Physics, University of Michigan, Ann Arbor, Michigan. 1997–2003.
M.S., Electrical Engineering, University of Michigan, Ann Arbor, Michigan.
1997–2002. Major in optics and minor in solid state.
B.A., Physics and physics education, Beijing Normal University, Beijing, China. 1993–1997.

Employment History

Associate Professor: Physics Department, University of Texas-Austin, 2013–Present
Assistant Professor: Physics department, University of Texas-Austin, 2007–2013
Postdoctoral Associate: JILA, University of Colorado, 2003–2006

Honors

APS fellow, 2015
Humboldt Fellowship for Experienced Researchers from German Government, 2015–2016
Kavli Fellow, 2013
Presidential Early Career Award for Scientists and Engineers (PECASE), 2009
Alfred P. Sloan Research Fellowship, 2008–2011
NSF CAREER AWARD 2008
AFOSR YIP AWARD 2008
ONR YIP AWARD 2008

Interests

Xiaoqin Elaine Li's research is in the area of condensed matter physics. In particular, her group applies optical spectroscopy methods to investigate properties of nanomaterials. Her research aims to address several grand challenges in materials science including "control material processes at the level of electrons", "design and perfect atom- and energy-efficient syntheses of new forms of matter with tailored properties", and "characterize and control materials away from equilibrium. In the last few years, Li group has been investigating elementary excitations in materials including phonons (collective lattice vibration), magnons (collective spin rotations), and excitons (bound electron-hole pairs) in various material systems including magnetic insulators, multilayer heterostructures and atomically thin materials. Her research may impact future information storage and processing technology.

Allan H. MacDonald

Education

Ph.D. (1978) University of Toronto (Canada)
M.S. (1974) University of Toronto (Canada)
B.S. (1973) St. Francis Xavier University (Canada)

Employment History

Sid W. Richardson Foundation Regents Chair, September 2000 – present, The University of Texas at Austin
Distinguished Professor of Physics, September 1992 – August 2000, Indiana University
Professor of Physics, September 1987 – August 1992, Indiana University
Associate Research Scientist, National Research Council of Canada, August 1982 – August 1987
Assistant Research Associate, National Research Council of Canada, November 1980 – June 1982
Research Associate, National Research Council, May 1978 – October 1980
Ph.D. Student, University of Toronto, September 1973 – April 1978

Honors

Ernst Mach Honorary Medal Academy of Sciences of the Czech Republic (2012)
Fellow of National Academy of Sciences (2010)
Outstanding Referee, The American Physical Society (2008)
Co-recipient of the Buckly Prize (2007)
Fellow of the Academy of Arts and Sciences (2005)
Sid W. Richardson Foundation Regents Chair (2000)
Fellow of the American Physical Society (1989)
Herzberg Medal, 1987 (Awarded by the Canadian Association of Physicists)
NSERC 1967 Science Scholarship, University of Toronto, 1973–1977
Governor-General's Medal, St. Francis Xavier University, 1973
(Highest academic standing in graduating class)

President's Scholarship, St. Francis Xavier University, 1969–1973

Interests

Allan H. MacDonald is a theoretical condensed matter physicist. His interests focus on inventing theories of unexplained observations and on proposing new phenomena that are experimentally accessible. He has contributed to research on electronic structure theory, the quantum Hall effect, magnetism, spintronics, and superconductivity, among a variety of other topics.

Swadesh Mahajan

Education

Ph.D. in Physics, University of Maryland at College Park, MD, 1973
Masters in Physics, Delhi University, India, 1966
Bachelors with Honors, Delhi University, India, 1966

Employment History

Research Professor, IFS, The University of Texas at Austin, 2005-
Senior Research Scientist, Research Scientist, IFS, The University of Texas at Austin, 1977-2003
Post doctoral fellow- PPPL, Princeton University 73-75, 76-77
Scientist, Bhabha Atomic Res. Centre, India 75-76
Director, Plasma Physics Activity at the International Centre for Theoretical Physics, Trieste, Italy, 1989-
Distinguished professor and Senior Advisor, SNU University, New Delhi, India 2012-

Honors

Fellow of the American Physical Society (1987)
Fellow of the Third World Academy of Sciences (1991)
Director, Plasma Physics Activity at the International Centre for Theoretical Physics, Trieste, Italy, 1989-
Distinguished professor and Senior Advisor, SNU University, New Delhi, India 2012-
Lead author of one of the hundred most influential papers selected for the Hundred Year Commemorative Volume (1995) of The Physical Review, and Physical Review Letters.
Co-inventor: 1) a novel magnetic field geometry, called the Super-X-Divertor, a sine qua non for all high-power density fusion sources, and 2) of a compact modular Fusion-Fission Hybrid system- patented- US8279994 B2- Inventor of Global Alfven Waves, of the Magneto -Fluid relaxed states, of the Reverse Dynamo Mechanism for generating flows, and unifying the electromagnetic and the thermal –kinematic forces.

Interests

Swadesh Mahajan's research spans most active areas of plasma physics – Basic and foundational physics, Nuclear fusion, Astrophysics, Cosmology, Laser created and naturally occurring high energy density systems. A short list of representative topics of current research will include: 1) Finding the most suitable fusion worthy configuration in tokamaks (Mahajan's group is the world leader in investigating this problem using the most extensive simulations aided by theory), 2) Constructing a unified theory of classical forces- electromagnetic and the Fluid -Thermal (the Electro-Vortic Field) and exploring the formalism to develop advanced theories of magnetic field and flow generation in astrophysical/cosmic settings, 3) Invoking collective plasma processes (linear and nonlinear waves, resonant interactions) to explain phenomena like particle acceleration to the PEV energy range, radio emission from compact objects like pulsars, 4) constructing a semi quantum theory of a relativistic hot plasma interacting with an arbitrary amplitude electromagnetic field.

Michael Marder

Education

1986	Ph.D. (Physics), University of California, Santa Barbara
1982	A.B. Summa cum Laude (physics and mathematics), Cornell University

Employment History

2013--	Executive Director, UTeach Science Program, UT Austin
2007-2013	Associate Dean for Science and Mathematics Education, UT Austin
2000--	Professor of Physics, The University of Texas at Austin
1998-2007	Director of Special Projects, The University of Texas at Austin
1994-2000	Associate Professor of Physics, The University of Texas at Austin
1988-1994	Assistant Professor of Physics, The University of Texas at Austin
1986-1988	Research Associate, James Franck Institute, University of Chicago

Honors

2014	Cozzarelli Prize for best paper in applied sciences in PNAS
2011	Rostow Leadership Award from Austin Project.
2010	Joe and Bettie Branson Ward Excellence Award
2008	Elizabeth Shatto Massey Award for Excellence in Teacher Preparation
2008	American Physical Society Outstanding Referee
2005	Fellow of the American Physical Society
1989	Sloan Fellow

Interests

Michael Marder has general interest in theoretical soft condensed matter physics and in education. In soft condensed matter physics his specialty is fracture of materials. Recently he has been applying ideas from soft matter physics to gas and oil recovery from hydrofractured wells, studying fracture of geophysical formations and single and multiphase flow in fractured media. In education, his research interests lie in studying and presenting educational data, with a focus on effects of poverty. He has carried out value-added studies of teachers and observational studies of classrooms. He is a co-founder and executive director of UTeach, a program based at UT Austin preparing STEM teachers at 44 universities across the United States. One of his most frequent teaching assignments is first-semester algebra-based physics for non-majors, now being offered as a dual-enrollment course to high school students across Texas. Another frequent teaching assignment is a course on research methods for science delivered to preservice teachers in UTeach.

Christina Markert

Education

Ph.D. in Physics, Johann Wolfgang Goethe University, Frankfurt Germany (2001)
Diploma in Physics, Johann Wolfgang Goethe University, Frankfurt Germany (1996)

Employment History

Associate Professor, University of Texas at Austin (2012 – present)
Assistant Professor, University of Texas at Austin Aug (2006–2012)
Senior Research Scientist, Kent State University, Kent OH (2004 –2006)
Associate Research Scientist, Yale University, New Haven CT (June 2004 – Sep 2004)
Postdoctoral Research Associate, Yale University, New Haven CT (Feb 2001 – May 2004)
Research Associate, GSI Darmstadt, Germany (1996 – 2001)

Honors

Provost Teaching Fellow (2017)
Scientific Associate at CERN (PDAS) (2013)
Department of Energy, Early Career Research Program Award (2010)
Natural Science Council, Faculty Service Award (2009)
Alexander von Humboldt Foundation, Feodor-Lynen Research Fellowship (2001)

Interests

Experimental heavy ion physics at the ALICE experiment at CERN and the STAR experiment at Brookhaven National Laboratory (BNL). Investigating the Quark Gluon Plasma (QGP) medium and the phase transition of nuclear matter from partonic into hadronic matter via hadronic resonances and heavy flavor quark energy loss. Theoretical model calculations using EPOS and PHSD in collaboration with Nantes University (France) and Frankfurt University (Germany). Development of detector readout electronics for the Inner Tracking System (ITS) for the ALICE detector as part of the major ALICE Barrel Tracking Upgrade (BTU) and the sPHENIX experiment at BNL.

John T. Markert

Education

Doctor of Philosophy in Physics, Cornell University (Ithaca, NY), 1987.
Master of Science in Physics, Cornell University (Ithaca, NY), 1984.
Bachelor of Arts in Physics and Mathematics, Bowdoin College (Brunswick, ME), 1979.

Employment History

Distinguished Academy Professor, University of Texas at Austin, 2015–present.
Professor of Physics, University of Texas at Austin, 2000–present.
Department Chair, Physics, University of Texas at Austin, 2005–2009.
Associate Professor of Physics, University of Texas at Austin, 1995–2000.
Assistant Professor of Physics, University of Texas at Austin, 1990–1995).
Postdoctoral Associate, Physics, University of California, San Diego, 1987–1989.

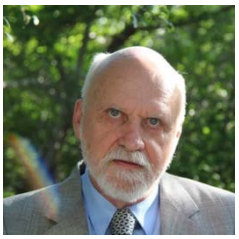
Honors

President's Associates Teaching Excellence Award, University of Texas at Austin (2017).
Academy of Distinguished Teachers, University of Texas at Austin (2015).
College of Natural Sciences Teaching Excellence Award, University of Texas at Austin (2014).
Fellow, American Physical Society (Condensed Matter Physics), 2009.
Thornberry Professor Fellowship, University of Texas at Austin (2009–2011).
Hamilton Book Award (2008; for *Physics for Engineers and Scientists*, W. W. Norton and Co.).
College of Natural Sciences Teaching Excellence Award, University of Texas at Austin (1999).
National Science Foundation Presidential Young Investigator Award (1991–1996).
Blumberg Centennial Professor Fellowship, University of Texas at Austin (1991–1993).

Interests

John Markert's research is in the area of experimental condensed matter physics. The emphasis is in materials physics, with a focus on magnetic and superconducting phenomena, particularly involving reduced dimensionality: layered or chain structures, interfaces, and thin films. Synthesis techniques such as flux and electrolytic crystal growth have more recently been complemented by electron-beam and laser ablation depositions of epitaxial films and multilayers. His work aims to correlate composition and structure with magnetic, electronic, and thermal properties using cryogenic transport, susceptibility, heat capacity, mechanical oscillator, and magnetic resonance techniques. He also has a strong interest in physics and research education, leading the physics stream of UT's Freshman Research Initiative, and developing active-learning techniques, including peer-instruction activities, both for calculus-based university materials, and for algebra-based curricula for the UT OnRamps high school dual-enrollment physics courses.

Richard Matzner



Education

Ph.D.: University of Maryland, 1963-1967, Physics (August 1967).
Title of Ph.D. Dissertation: "Almost Symmetric Spaces and Gravitational Radiation"
B.S.: University of Notre Dame, Physics (June 1963)

Employment History

Senior Science Advisor, East Asia & Pacific, U. S. Department of State, Aug 2012- Aug 2013.
Orson Anderson Scholar, Los Alamos National Laboratory, September 1996-May 1997.
Lead Principal Investigator, The Binary Black Hole Grand Challenge Alliance, 1993-1999
Visiting Professor, Astrophysics Department, Oxford University, 1981-1982.
PROFESSOR OF PHYSICS, The University of Texas at Austin, September 1980-
DIRECTOR, CENTER FOR RELATIVITY, University of Texas at Austin, 1987-
Associate Professor, The University of Texas at Austin, 1973-1980.
Member of expeditionary team to Mauritania, June-July 1973.
Assistant Professor, The University of Texas at Austin, 1969-1973.
National Science Foundation Faculty Associate, The University of Texas at Austin, 1967-1969
Physicist (GS 7), Naval Research Laboratory, Washington, D.C., Summer 1964.

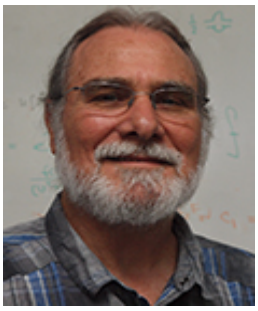
Honors

Fellow, American Physics Society (1995).
University Silver Medal, Universidad Nacional Autonoma de Mexico, 1990.
Honorable Mention (with B. Tolman), Gravity Essay Competition, 1982.
University Medal, Helsinki University, 1982.
Honorable Mention, Gravity Essay Competition, 1980.
First Prize (shared), Fall 1978 McDonald Observatory News Popular Science Writing Contest.
Honorable Mention (with J. Barrow), Gravity Essay Competition, 1977.

Interests

Richard Matzner is a relativist and astrophysicist who studies — with his students —theoretical to observational/experimental questions in Einstein's description of gravity, General Relativity. Theoretical questions include topology and signature change in the early universe, and quantum gravity using the tool of path integration. Observational/experimental studies include tests of General Relativistic effects via laser-ranging to dense geodetic satellites. Matzner is a Co-I member of the LARES satellite team, and of the recently approved LARES 2 satellite team. (LARES, the densest artificial satellite in orbit, was launched in 2012; LARES 2 is expected to be launched in 2019). Matzner's teaching program includes organizing undergrad and graduate students in study of the gravitational wave detector LIGO open data, using open-source LIGO software. (Matzner is a past chair of LIGO's external review committee, the *LIGO Program Advisory Committee*.)

Philip Morrison



Education

B.A. in Physics (Anthropology minor), University of California, San Diego, June, 1972
M.S. in Physics, University of California, San Diego, March, 1974
Ph.D. in Physics, University of California, San Diego, June, 1979

Employment History

1992- Professor, The University of Texas at Austin Physics Department
1988-92 Associate Professor, The University of Texas at Austin Physics Department
1981-88 Assistant Professor, The University of Texas at Austin, Physics Department
1981- Staff Scientist, The University of Texas at Austin Institute for Fusion Studies
1979-1981 Postdoctoral Research Associate, Princeton University, Plasma Physics Laboratory
1972-1979 Teaching and Research Associate, University of California at San Diego

Honors

Humboldt Research Award (Forschungspreis) 2016
European Physical Society Invited Talk 2016
Regents Outstanding Teaching Award Finalist 2015
XXXIX Summer School on Mathematical Physics, INdAM and GNFM, Ravello, Italy 2014
Cataldo e Angiola Gili Agostinelli Prize for Math. Phys., Accademia Nazionale dei Lincei 2013
College of Natural Sciences Teaching Excellence Award 2013
Honored by Special Issue of Comm. Nonlinear Sci. and Num. Sims. 17 (5) 2012
American Physical Society One-Hour Review Talk 2016, 2002
American Physical Society One Hour Tutorial Talk 2004
American Physical Society Centennial Address 2000
American Physical Society Invited Talk 1981, 1986, 1993
Geophysical Fluid Dynamics Principal Lecture, Woods Hole, MA 1993
Fellow of the American Physical Society 1992
Dad's Association Centennial Teaching Fellowship 1988
Natural Sciences Council Teaching Excellence Award 1982

Interests

Basic and applied plasma physics and fluid mechanics, mathematical physics, dynamical systems/nonlinear dynamics, computational physics/algorithm development.

Qian Niu

Education

Ph. D. Physics, University of Washington (1985)
M. S. Physics, University of Washington (1983)
B. S. Physics, Peking University (1981)

Employment History

Trull Centennial Professor, University of Texas (2001-present).
Assistant and Associate Professor, University of Texas (1990-2001).
Visiting Scientist, UC Santa Barbara (1988-1990).
Research Associate, University of Illinois (1985-1987).

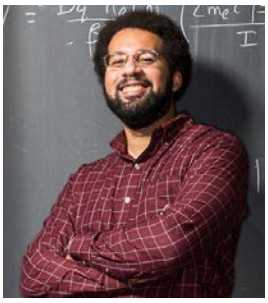
Honors

Fellow of the American Physical Society (1999-). Citation: `for contributions to the theories of quantum transport'
Trull Centennial Professorship (2001-).
Blumberg Fellowship (1992-1993).
Trull Centennial Fellowship (1990-1992).
Thousand Talent Program of China (2011).
Wang Kuan Cheng Research Award (1997).
Outstanding Overseas Young Scientist (1999, Natural Science Foundation of China).
Honorary Adjunct Professors at the Institute of Physics, Institute of Theoretical Physics, and Shanxi University in China.

Interests

Theoretical Condensed Matter physics, focusing on geometrical and topological properties of electronic systems in solids and 2D materials.

Peter Onyisi



Education

Ph.D., Physics, Cornell University, 2008
M.S., Physics, Cornell University, 2006
B.A., Physics and Applied Mathematics with honors, University of Chicago, 2003

Employment History

Assistant Professor, University of Texas at Austin, 2012-Present
Fermi Postdoctoral Research Fellow; Postdoctoral Scholar, University of Chicago, 2008-2012
Research Assistant, Cornell University, 2003-2008
Undergraduate Research Assistant, University of Chicago, 1999-2003

Honors

University of Chicago Enrico Fermi Postdoctoral Fellowship
National Science Foundation Graduate Research Fellowship

Interests

Peter Onyisi's research is in experimental particle physics. He is a member of the ATLAS experiment at the Large Hadron Collider, the highest energy particle accelerator in the world. He currently studies the interactions of the heaviest known particle, the top quark, with the recently discovered Higgs boson, looking for behaviors predicted and unexpected in the Standard Model of particle physics. His focus for the next four or five years is operations of the ATLAS experiment and upgrades for the future high luminosity operation of the LHC.

Raymond L. Orbach

Education

Doctor of Philosophy in Physics, University of California, Berkeley (Berkeley, CA), 1960
Bachelor of Science in Physics, California Institute of Technology (Pasadena, CA), 1956

Employment History

Professor of Mechanical Engineering, Physics, and the Jackson School of Geosciences, The University of Texas at Austin, 2009 –
Founding Director, The Energy Institute, The University of Texas at Austin, 2009 - 2012
Under Secretary for Science, U.S. Senate confirmed, U.S. Department of Energy, 2006 – 2009
Director, Office of Science, U.S. Senate confirmed, U.S. Department of Energy, 2002 – 2009
Chancellor, University of California, Riverside, 1992-2002
Professor of Physics, University of California, Los Angeles, 1962 – 1992
Provost, College of Letters and Science, University of California, Los Angeles, 1982-1992
Assistant Professor of Applied Physics, Division of Engineering and Applied Physics, Harvard University, 1961-1963
National Science Foundation Postdoctoral Fellow, The Clarendon Laboratory, Oxford University, 1960-1961

Honors

Fellow, American Physical Society (1966)
Fellow, American Association for the Advancement of Science (1970)

Interests

Raymond L. Orbach's research is in the area of condensed matter physics. His work is both theoretical and experimental, involving the dynamical properties of materials. He has focused on magnetism, paramagnetic relaxation, electron spin magnetic resonance, non-equilibrium superconductivity, lattice dynamics, and spin-glass non-equilibrium properties. His current focus is on glassy systems, and physical properties of materials at the mesoscale (10 Å – 100 Å), in particular the growth of correlation lengths and the transition to chaos. His laboratory research utilizes Superconducting Quantum Interference Devices (SQUIDs) to measure the dynamical properties of glassy magnetic systems, with relevance to the glass transition.

Sonia Paban

Education

1988 Ph.D., Universitat de Barcelona, Spain (Advisor: Rolf Tarrach)
1985 M.A., Universitat de Barcelona, Spain (Advisor: Pere Pascual)
1984 B.S., Universitat de Barcelona, Spain

Employment History

Spring 2015 Member, Institute for Advanced Study, Princeton
Fall 2014 Visiting Researcher, Center for Theoretical Physics, MIT
2006- Associate Professor, University of Texas at Austin
2000-2006 Assistant Professor, University of Texas at Austin
1999-2000 Research Associate, University of Texas at Austin
1998-1999 Postdoc, University of Texas at Austin
1996-1998 Member, Institute for Advanced Study, Princeton
Ete '95, '99 Visitor, Institut des Hautes Etudes Scientiques
1994-1996 Postdoc, University of Texas at Austin
1992-1994 Postdoc, University of Minnesota at Minneapolis
1991-1992 Postdoc, University of Texas at Austin

Honors

2014-2015 Simons Fellow in Physics
2013 University of Texas Regents' Outstanding Teaching Award
2005 College of Natural Sciences Teaching Excellence Award

Interests

Sonia Paban's research interests are in high energy physics/cosmology. The Cosmic Microwave Background data is consistent with a theory of single field inflation in a universe that was already homogenous and isotropic. There are many unknowns about this period including the energy scale, the nature of the inflation field and the robustness of inflation when the initial metric is neither homogenous nor isotropic. Paban's current work aims to answer two of these questions: (i) which inflationary potentials lead to a sustained period of inflation for anisotropic and inhomogeneous initial conditions? and (ii) how generic is it for models of multi-field inflation, very natural in string theory, to effectively emulate single field models? Paban is also working on more formal problems including tunneling in multi-field theories, both including and ignoring the effect of gravity, and the problem of measurement in quantum mechanics.

Andrew C. Potter

Education

ScB Engineering-Physics, Brown University (2004)
PhD Physics, Massachusetts Institute of Technology (2013)

Employment History

Asst. Professor, The University of Texas at Austin (2016-present)
Postdoctoral Fellow, University of California, Berkeley (2013-2016)

Honors

NSF CAREER Award (2017)
Gordon and Betty Moore Postdoctoral Fellowship (2013-2016)
NSF Graduate Fellowship (IQUISE, MIT 2005-2007)
Rosenbluth Presidential Fellowship (MIT, 2004)

Interests

Andrew Potter works on the theory of condensed matter systems, including correlated electron materials and trapped atoms, ions, and molecules. His research focuses on developing theoretical tools to classify and understand the properties of exotic phases of matter such as topological phases, quantum critical systems, quantum glasses, and interacting quantum liquids without quasi-particles. A second focus is on understanding the universal properties of quantum dynamics far from equilibrium, and investigating methods to coherently manipulate quantum information. This has included the discovery of new families of dynamical phenomena such as time-crystals, dynamical quantum phase transitions, and non-equilibrium topological phases that could not occur in thermal equilibrium settings. His work synthesizes analytic and numerical approaches from quantum field theory, quantum information, and algebraic topology.

Mark G. Raizen

Education

Doctor of Philosophy in Physics, University of Texas at Austin, 1989
Bachelor of Science in Mathematics with honors, Tel-Aviv University, 1980

Employment History

Professor of Medicine, Dell Medical School, University of Texas at Austin, 2017-
Professor of Physics, University of Texas at Austin, 2000-
Associate Professor of Physics, University of Texas at Austin, 1996-2000
Assistant Professor of Physics, University of Texas at Austin, 1991-1996
Postdoctoral Research, Time and Frequency Division, NIST, 1989-1991.

Awards and Honors

W. M. Keck Foundation Research Award (2015), Batsheva de Rothschild Fellow (2013), Willis E. Lamb Medal in Laser Science and Quantum Optics (2008), Outstanding Doctoral Thesis Supervisor Award, John and Fannie Hertz Foundation (2003), 29th Hanan Rosenthal Memorial Lecture, Yale Univ.(2002), Max Planck Award, The Max Planck Society and The Alexander von Humboldt Foundation (2002), Weston Visiting Professor, Weizmann Institute of Science, (2001), Outstanding Doctoral Thesis Supervisor Award, John and Fannie Hertz Foundation (2003), Sid W. Richardson Foundation Regents Chair in Physics (2000-), 1999 I. I. Rabi Prize in Atomic, Molecular, and Optical Physics, American Physical Society, Fellow, American Physical Society (1997), Fellow, Optical Society of America (2001), National Science Foundation Young Investigator (1993-1998), Office of Naval Research Young Investigator (1992-1995), Alfred P. Sloan Foundation Research Fellow (1992-1994), National Research Council Postdoctoral Fellowship (1989-1991), IBM Graduate Fellowship (1987-1988), University of Texas Graduate Fellowship (1986-1987).

Interests

Mark Raizen's research is in the area of experimental atomic, molecular, and optical physics. His group pioneered the study of quantum chaos with ultra-cold atoms. In parallel, they studied quantum transport of atoms in accelerating optical lattices, establishing a new paradigm of condensed matter phenomena with ultra-cold atoms. In a recent study of short-time Brownian motion, Mark and his group verified a prediction by Einstein from 1907 and established a new testing ground for fluid dynamics on the microscale. He developed general methods of cooling and trapping of atoms as an alternative to laser cooling, which has been limited to a small set of elements. The two-step approach uses a series of pulsed electromagnetic coils to stop atoms in a supersonic beam. Atoms that are magnetically trapped can be further cooled by a one-way wall for atoms, a direct realization of Maxwell's Demon from 1871. This recent work opens the door to trapping and cooling of most elements in the periodic table and many molecules. It also changes the way isotopes are separated, with important applications in medicine, now being pursued at the Dell Medical School and at a non-profit entity that he started, the Pointsman Foundation.

Linda Reichl

Education
Ph.D. Physics, University of Denver, August 1969

Employment History
N.S.F. Faculty Associate, UTAustin, 1969-71
Fulbright-Hays Scholar, Brussels Free University, 1971-73
UTAustin – Assist. Prof. (1973-1980); Assoc. Prof. (1980-88); Prof. (1988-present)
Associate Dean for Academic Affairs in the College of Natural Sciences, (2006-2010)
Associate Chair, Department of Physics, (2013 – 2015).
Acting Director, Prigogine Center for Statistical Mechanic, UTAustin (1974-2003)
Director, Complex Quantum Systems Center, UT Austin, 2006-12. Co-Director 2012-present.
U.S. Editor of journal "Chaos, Solitons, & Fractals", 1997-2010.

Honors
Elected Fellow of the American Physical Society for "original work in the field of quantum chaos", 2000.

Interests
Nonlinear dynamics; classical and quantum chaos in molecules, optical lattices, electron waveguides, scattering processes; dynamics of periodically driven quantum systems, transport properties of quantum gases and Bose-Einstein condensates, stochastic physics.

Books published

1. L.E. Reichl, *A Modern Course in Statistical Physics*, 4th Edition, (Wiley-VCH, 2006). Translated into Japanese and Chinese.
2. L.E. Reichl, The Transition to Chaos: Conservative Classical Systems and Quantum Manifestations, 2nd Edition, (Springer, 2004). Translated into Russian.

Journal Publications and students

More that 165 publications in refereed journals on topics listed above, and 35 PhD students graduated as of 2017.

Jack L. Ritchie

Education

Doctor of Philosophy in Physics, University of Rochester (Rochester, NY), 1984
Master of Arts in Physics, University of Rochester (Rochester, NY), 1979
Bachelor of Science in Physics with Honors, University of Texas at Austin, 1977

Employment History

Professor of Physics, University of Texas at Austin, 2001–
Senior Program Officer, Office of High Energy and Nuclear Physics, Office of Science, U.S. Department of Energy, 1999–2001 (on leave from UT Austin)
Associate Professor of Physics, University of Texas at Austin, 1993–2000
Assistant Professor of Physics, University of Texas at Austin, 1988–1993
Acting Assistant Professor of Physics, Stanford University, 1986–1988
Research Associate, Department of Physics, Stanford University, 1984–1986

Honors

Fellow, American Physics Society (2003)

Interests

Jack Ritchie's research is in the area of experimental particle physics. A common theme in his research across a number of experiments has been the search for small effects which would
signal the existence of new physics beyond the Standard Model. This has included searching for lepton-flavor violating rare kaon decays and measuring the properties of extremely rare flavor- changing neutral current decays of kaons and B mesons. His current focus, and the focus for the next four or five years, is a new experiment at Fermilab that will make a substantial improvement in the measurement of the anomalous magnetic moment of the muon.

Roy Schwitters

Education

S.B., Physics, M.I.T., 1966
Ph.D., Physics, M.I.T., 1971

Employment History

1990 - present S.W. Richardson Regents Professor of Physics
The University of Texas at Austin (1990 - 1994 0% time)
(1994 - present 100% time)
2001 - 2005 Chair, UT Department of Physics
1989 - 1993 Director, Superconducting Super Collider Laboratory
1979 - 1990 Professor of Physics, Harvard University
1977 - 1979 Associate Professor, Stanford Linear Accelerator Center
1974 - 1977 Assistant Professor, Stanford Linear Accelerator Center
1971 - 1974 Research Associate, Stanford Linear Accelerator Center

Honors

Sigma Xi Award, Stanford University, 1975
Alan T. Waterman Award, National Science Foundation, 1980
Fellow, American Academy of Arts and Sciences, 1987
Member, Texas Philosophical Society, 1992
Honorary Doctor of Laws, Southwest Adventist College, 1993
Panofsky Prize, American Physical Society, 1996
Humboldt Research Prize, A. von Humboldt Foundation, 1998

Interests

Roy Schwitters switched his research interests in early 2000's from experimental high energy physics to technical matters related to national security. Much of that work involves classified briefings and reports that he has carried out with the JASON group of scientists and engineers. He has briefed government officials, members of congress, and Strategic Command on aspects of his JASON work. Part of an early JASON study led to an effort at UT aimed at developing practical detectors and analysis methods for conducting muon tomography to image in 3D interiors of large objects normally hidden from view. A practical demonstration of that technology is now operating in Belize to image an unexplored Maya pyramid, in collaboration with UT researchers from the Program for Belize Archaeological Research Project. That work has been supported by UT, via the Physics Department, and Sandia National Laboratories. Schwitters' teaching interests have mainly focussed on upper division physics courses in areas of modern physics and electricity and magnetism. He developed a new elective course in E&M for physics majors.

Chih-Kang (Ken) Shih

Education

Ph.D. in Applied Physics, Stanford University (Stanford, CA), 1988
Master of Arts in Physics, University of Oregon (Eugene, OR), 1981
Bachelor of Science in Physics, National Tsing-Hua University (Hsin-Chu, Taiwan), 1977

Employment History

Professor of Physics, University of Texas at Austin, 2002 –
Associate Professor of Physics, University of Texas at Austin, 1996–2002
Assistant Professor of Physics, University of Texas at Austin, 1990–1996
Postdoctoral Fellow, IBM T.J. Watson Research Center, Yorktown, NY1988–1989

Honors

Fellow, American Physics Society (2007)

Interests

Ken Shih's research is in the area of experimental condensed matter physics. A common theme in his research is to control condensed matter systems with atomic precision and achieve quantum control of electronic properties. One example is to control the metallic thin film system in a regime where quantum confinement plays a critical role in the physical properties such as superconductivities of the thin film. Another example is to tailor the electronic, photonic, and light matter interactions of 2D electronic materials.

Greg O. Sitz

Education

B. A. in Chemistry, Rice University, 1981, Cum Laude
Ph. D. in Chemistry, Stanford University, 1987.
Thesis title: "Rotationally Inelastic Scattering of N2 from Ag (111): Populations and Polarizations."

Employment History

2002-present:	Professor of Physics at The University of Texas at Austin
1996-2002:	Associate Professor of Physics at The University of Texas at Austin
1989-1996:	Assistant Professor of Physics at The University of Texas at Austin
1988-1989:	Postdoctoral Fellow, working with R. L. Farrow at Sandia National Labs.

Honors

Morton M. Traum Award, American Vacuum Society, 1986
President’s Associates Teaching Excellence Award 1997-98
College of Natural Sciences Teaching Excellence Award in Physics 2010
Member of The University of Texas at Austin, Academy of Distinguished Teachers (since 2010)
Holder, The William David Blunk Memorial Professorship, 2012-13.

Interests

Greg Sitz's research is in the area of experimental chemical physics. He uses a combination of nonlinear optics, molecular beams and ultrahigh vacuum surface science to study the dynamics of molecule-surface interactions. The emphasis is on the role that the internal rotational and vibrational quantum state of the molecule plays in the interaction. Such measurements play a crucial role in testing the validity of current theory in this field. He is also the Department's undergraduate advisor and plays a major role in the Department's affairs such as course offerings and degree supervision.

Harry L. Swinney

Education

B.S. with Honors (physics), Rhodes College, 1961
Ph.D. (physics), Johns Hopkins University, 1968

Employment History

1990- Sid Richardson Foundation Regents Chair in Physics, University of Texas at Austin
1984-90: Trull Centennial Professor, University of Texas at Austin
1978-84: Professor, University of Texas at Austin
1978: Professor, City College of CUNY
1973-77: Associate Professor, City College of CUNY
1971-73: Assistant Professor, New York University

Honors

2013: Boltzmann Medal of the International Union of Pure and Applied Physics
2012: Lewis Fry Richardson Medal of the European Geosciences Union
2009: Fellow, Society of Industrial and Applied Mathematics
1995: Fluid Dynamics Prize of the American Physical Society
1992: Member, National Academy of Sciences
1983-84: John Simon Guggenheim Fellowship

Interests

Swinney studies dynamics and chaos in diverse systems. A current study with Prof. Radin (Math) of age-old problem, spheres packed in a container, has revealed nucleation at the onset of a phase transition at a well-defined sphere volume fraction. Swinney and Prof. Morrison (Physics) are examining dynamics and transport in the oceans; one goal is to determine the contribution of internal ocean waves to the earth's energy budget. Swinney and Prof. Florin (Physics) study growth of bacterial colonies and discovered a previously unknown toxin; fluctuations in bacterial number were found to scale differently from number fluctuations in equilibrium systems, yet the velocity correlations for the bacteria were the same as for flocks of starlings. Swinney and Prof. E. Li (Physics) are developing learning modules designed to decrease the dropout rate in introductory physics. In 2007 Swinney co-founded an annual international 2-week "Hands-On School" for young science faculty from developing countries; Swinney continues as a co-director of the annual school, which is held at the International Centre for Theoretical Physics (Trieste).

Maxim Tsoi

Education

Ph. D. (summa cum laude), Physics, Konstanz University, Germany, 1998
M. S., Physics, Moscow Institute of Physics and Technology, 1995
B. S., Physics, Moscow Institute of Physics and Technology, 1993

Employment History

Associate Professor, Department of Physics, University of Texas (2009-present)
Assistant Professor, Department of Physics, University of Texas (2003-2009)
Research Associate, IBM Research Division (2001-03)
Research Associate, Department of Physics, Michigan State University (2000-01)
Postdoctoral Fellow, Grenoble High Magnetic Field Laboratory, Max-Planck-Institut für Festkörperforschung and Centre National de la Recherche Scientifique, Grenoble, France (1998-00)
Research Assistant, Grenoble High Magnetic Field Laboratory, Max-Planck-Institut für Festkörperforschung and Centre National de la Recherche Scientifique, Grenoble, France (1995-98)
Research Assistant, Institute of Solid State Physics RAS, Chernogolovka, Russia (1993-95)

Honors

National Science Foundation CAREER Award (2006)
Rugnar Holm Plaquette, Royal Institute of Technology (KTH), Stockholm, Sweden (2002)

Interests

Maxim Tsoi's research is in the area of experimental condensed matter physics. The main focus is on spintronics. A common theme in his research has been the experimental studies of spin-transfer torque. Starting from the first experimental observation of the spin-torque effect in magnetic multilayers he continues to investigate effects of extreme electrical biases on the transport properties of magnetic materials and heterostructures. His current focus, and the focus for the next four or five years, is the new field of antiferromagnetic spintronics. Antiferromagnetic materials are especially interesting for high-speed memory applications thanks to their high natural frequencies. Of particular interest are 5-d transition metal oxides due to their rich and widely unexplored physical phenomena. Materials like Sr_2IrO_4, $Sr_3Ir_2O_7$, and Ca_2RuO_4 will play a critical role in his research.

François Waelbroeck

Education

Doctor of Philosophy in Physics, University of Texas (1988)
License en Sciences Appliquées, Free University of Brussels (1982)

Employment History

Director, Inst. Fusion Studies, University of Texas at Austin, 2011-present. Research Professor, Dept. of Physics, University of Texas at Austin, 2011-present
Associate Director, Inst. Fusion Studies, University of Texas at Austin, 2004-2011
Assistant Director, Inst. Fusion Studies, University of Texas at Austin, 2002-2004
Research Scientist, Inst. Fusion Studies, University of Texas at Austin, 1994-2002.
Associate Scientist, Inst. Fusion Studies, University of Texas at Austin, 1993-1994
Postdoctoral Fellow, Lab. Plasma Research, University of Maryland, 1990-1992
Postdoctoral Fellow, Plasma Physics Lab., Princeton Univ., 1989-1990
Postdoctoral Fellow, Ecole Polytechnique, France, 1989

Honors

Fellow, American Physical Society (2009); Institute of Physics (2003).

Interests

François Waelbroeck works primarily on the macroscopic dynamics of fusion plasmas. A theme of his research is the role of resonant layers in the nonlinear evolution of sub-Alfvénic instabilities. His research interests include magnetic reconnection, the nonlinear evolution of coherent structures, and the formulation of fluid models. His work uses a combination of analytic and numerical methods and has broadened in recent years to include the investigation of discontinuous Galerkin methods for plasma simulations. He is the coauthor, with R. D. Hazeltine, of the textbook *The Framework of Plasma Physics.*

Steven Weinberg

Education
Cornell University, 1950–1954 (A.B., 1954)
Copenhagen Institute for Theoretical Physics, 1954–1955
Princeton University, 1955–1957 (Ph.D.,1957).
Employment History
Josey Regental Professor of Science, University of Texas, 1982–
Smithsonian Astrophysical Observatory, 1973-1983, Senior Scientist
Harvard University, 1973–1983, Higgins Professor of Physics
Massachusetts Institute of Technology, 1969–1973, Professor of Physics
University of California, Berkeley, 1960–1969 (faculty, became full professor 1964)
Lawrence Radiation Laboratory, 1959–1960, postdoctoral fellow
Columbia University, 1957–1959, instructor
Honors
Eighteen Honorary Doctoral Degrees
Elected member US National Academy of Sciences, Royal Society of London, Royal Irish Academy, American Philosophical Society, American Academy of Arts and Sciences
J. Robert Oppenheimer Prize, 1973
Dannie Heineman Prize for Mathematical Physics, 1977
American Institute of Physics – United States Steel Foundation Science Writing Award for 1977
Elliott Cresson Medal of the Franklin Institute, October 1979
Nobel Prize in Physics, December 1979
James Madison Medal, Princeton University, 1991
National Medal of Science, 1991
Andrew Gemant Award, American Institute of Physics, 1997
Piazzi Prize, Governments of Palermo and Sicily, 1998
Lewis Thomas Prize for the Scientist as Poet, Rockefeller University, 1999
Benjamin Franklin Prize, American Philosophical Society, 2004
Named Honorary Citizen of Padua, Italy, May 2007
Trotter Prize, Texas A&M University, March 2008
James Joyce Award, Literary and Historical Society of University College, Dublin, February 2009
Texas Writer's Award, Texas Book Festival, October 2013
Interests

Steven Weinberg's research has extended over many areas of theoretical physics, especially in the theory of elementary particles and in cosmology. In recent years, he has been concerned with the fundamentals of quantum mechanics, and in particular whether any viable generalization of quantum mechanics is possible. He recently showed that existing observations of atomic clocks set stringent limits on the terms in the Lindblad equation for the density matrix representing departures from ordinary quantum mechanics. He has also returned to his concern with cosmology, beginning work on a new project: to evaluate the effects of intervening matter on gravitational radiation from distant sources, such as gravitational waves from coalescing black holes discovered by the LIGO observatory and from quantum fluctuations in the early universe.

In addition to his research, he is completing two new books. One book, to be published by Harvard University Press, is a collection of his essays for general readers over the past decade, some not previously published. The other book, to be published by Cambridge University Press, is a treatise on astrophysics, based on the lecture notes for courses he has given in the past and will give in Fall 2017.

Zhen Yao

Education

B. S. in Physics, University of Science and Technology of China, 1992
M. S. in Applied Physics, Harvard University, 1993
Ph. D. in Applied Physics, Harvard University, 1997

Employment History

Associate Professor of Physics, University of Texas at Austin, 2007 – present
Assistant Professor of Physics, University of Texas at Austin, 2001 – 2007
Postdoctoral Fellow, Delft University of Technology, The Netherlands, 1997 - 2000

Honors

Alfred P. Sloan Fellowship, 2002
Outstanding Young Researcher Award, Overseas Chinese Physics Association, 2002

Interests

Zhen Yao's research has focused on electronic and thermal transport phenomena in nanoscale low-dimensional materials including carbon nanotubes, organic molecules, nanoparticles, graphene and other 2-dimensional layered materials. He is also interested in developing new strategies and techniques to make introductory physics courses more engaging and educationally more useful for non-physics majors, in particular premedical students.

John A. Yeazell

Education

1989, Ph.D., Optical Science, Institute of Optics, University of Rochester
1982, B.S., Summa cum laude, Physics, Xavier University, Cincinnati

Employment History

Non-tenure track Faculty, Physics, University of Texas at Austin, 2012 to present.
Director of Physical Sciences, University of Texas at Austin, 2015 to 2016.
Research Fellow, School of Human Ecology, University of Texas at Austin, 2011 to 2012.
Asst. to Head / Lecturer, Dept. of Physics, Purdue University, 2003 to 2010.
Senior Project Engineer at OPTELLIOS, Inc., 2000 – 2002.
Director of R&D at LICOM Technologies, Inc., 5.2000 – 9.2000.
Consultant at LICOM Technologies, Inc., 1.2000 – 5.2000.
Assistant Professor of Physics, Pennsylvania State University, 1994 – 2001.

Honors

Max-Planck Fellow 1992 – 1994, Max-Planck Institute for Quantum Optics

Interests

John Yeazell's area of interest is physics education. The improvement of the introductory physics courses through active learning has been a long-term goal. Currently, he has been looking at failure and drop rates in these introductory physics courses. He participated in the development of a physics readiness assessment to identify at risk students. He also helped develop an online readiness course to bring these at-risk students up to speed before the start of their first physics course. This online readiness course is being implemented for the first time for the Fall of 2017.

Graduate Catalog Degree Information and Advising Worksheets

Physics

Master of Arts
Master of Science in Applied Physics
Doctor of Philosophy

For More Information

Campus address: Robert Lee Moore Hall (RLM) 5.224, phone (512) 471-1664, fax (512) 471-9637; campus mail code: C1600

Mailing address: The University of Texas at Austin, Graduate Program, Department of Physics, 2515 Speedway Stop C1600, Austin TX 78712

E-mail: graduate@physics.utexas.edu

URL: http://www.ph.utexas.edu/

Facilities for Graduate Work

Modern facilities for graduate study and research include a large-scale cryogenic laboratory; synthesis and strong magnetic field equipment; nuclear magnetic and electron paramagnetic resonance laboratories; extensive facilities for tunneling and force microscopy and nanostructure characterization, SQUID magnetometry, and electron spectroscopy; well-equipped laboratories in optical spectroscopy, quantum optics, femtosecond spectroscopy and diagnostics, electron-atom and surface scattering and high-intensity laser science; and facilities for turbulent flow and nonlinear dynamics experiments. Plasma physics experiments are conducted at the major national tokamaks in Boston and San Diego. Experiments in high-energy heavy ion nuclear and particle physics are conducted at large accelerator facilities such as Brookhaven National Laboratory (New York), Fermi National Accelerator Laboratory (Illinois), and Stanford Linear Accelerator Center (California). Theoretical work in plasma physics, condensed matter physics, acoustics, nonlinear dynamics, relativity, astrophysics, statistical mechanics, and particle theory is conducted within the Department of Physics. Students have access to excellent computer and library facilities. The department maintains and staffs a machine shop, student workshop, low-temperature and high-vacuum shop, and electronics design and fabrication shop.

Areas of Study

The Department of Physics has active research groups in nine main areas of current physics research: atomic, molecular, and optical physics; classical physics; nuclear physics; statistical and thermal physics; plasma physics; condensed matter physics; nonlinear dynamics; relativity and cosmology; and elementary particle physics. In most of these fields both experimental and theoretical work is in progress.

Graduate Studies Committee

The following faculty members served on the Graduate Studies Committee in the spring semester 2017.

Timothy R Andeen Jr	Sheldon Landsberger
Herbert L Berk	Karol Lang
Arno R Bohm	Xiaoqin E Li

Boris Breizman	Allan H Macdonald
James R Chelikowsky	Swadesh M Mahajan
Charles B Chiu	Michael P Marder
William R Coker	Hans M Mark
Alex De Lozanne	Christina Markert
Alexander A Demkov	John T Markert
Duane A Dicus	Richard A Matzner
Jacques Distler	Milos Milosavljevic
Todd Ditmire	Philip J Morrison
Michael W Downer	Andrew M Neitzke
James L Erskine	Qian Niu
Gregory A Fiete	Peter Onyisi
Ila P Fiete	Raymond Lee Orbach
Manfred Fink	Sonia Paban
Willy Fischler	Andrew Potter
Richard Fitzpatrick	Mark G Raizen
Ernst-Ludwig Florin	Linda E Reichl
Daniel S Freed	Jack L Ritchie
Kenneth W Gentle	Roy F Schwitters
Austin M Gleeson	Paul R Shapiro
John B Goodenough	Chih-Kang Shih
Vernita Gordon	Greg O Sitz
Richard D Hazeltine	Harry L Swinney
Bjorn Hegelich	Devarajan Thirumalai
Daniel J Heinzen	Maxim Tsoi
Vadim Kaplunovsky	Francois Waelbroeck
John W Keto	Steven Weinberg
Can Kilic	John C Wheeler
Keji Lai	Zhen Yao

Degree Requirements

It is assumed that the student has an undergraduate background that includes mechanics, electricity and magnetism, statistical mechanics and thermodynamics, atomic physics, and quantum mechanics.

Master of Arts

The Master of Arts is not a part of the qualifying process for the doctoral degree. First-year students plan the first semester registration with the graduate adviser in physics. Students are encouraged to investigate all research groups in the department before selecting a professor to supervise a thesis project. The degree plan is then designed by the student, the supervising professor, and the graduate adviser. The time involved for completing a master's degree is related to the quality of the student's undergraduate background: the average time for completion by students with a good undergraduate background is one calendar year and one semester.

Master of Science in Applied Physics

This degree program is designed to provide students with a broad background in physics and related fields, with an emphasis on those aspects of the science most used in an industrial setting. The required physics courses include Physics 380N, 386K, 386N, 387K, and 389K; Physics 385K, *Classical Mechanics*, may be taken as an optional course. The supporting work must be in engineering, chemistry, or geological sciences. A thesis is also required.

Doctor of Philosophy

To be admitted to candidacy for the doctoral degree, the student must (1) fulfill the core course requirement described below; (2) show evidence of exposure to modern methods of experimental physics; this exposure may be gained in a senior-level laboratory course taken by the student as an undergraduate and approved by the graduate adviser and the chair of the Graduate Studies Committee, by previous participation in an experimental program, or in Physics 380N; and (3) fulfill the oral examination requirement described below.

Core courses. During the first two years of graduate study, the student must take four core courses: Physics 385K, 385L, 387K or 387L, and 389K or 389L. The student must earn an official grade of at least B- in each course and a grade point average of at least 3.33 in the four courses. The student may ask for the grade he or she earns in Physics 380N to be substituted for the grade in one of the core courses when the average is computed. A well-prepared student may seek to fulfill the core course requirement by earning satisfactory grades on the final examinations for some of these courses rather than by registering for them; in this case, the student does not receive graduate credit for these courses and the grade is not counted toward the required average.

The oral qualifying examination. After satisfying the first two requirements above, and within twenty-seven months of entering the program, the student must take an oral qualifying examination. The examination consists of a presentation before a committee of four physics faculty members, one of whom is a member of the Graduate Studies Subcommittee. The presentation is open to all interested parties. It is followed by a question period restricted to the student and the committee. The questions during this session are directed toward clarifying the presentation and helping the committee determine whether the student has a solid grasp of the basic material needed for research in his or her specialization. The student passes the examination by obtaining a positive vote from at least three of the four faculty members on the oral qualifying committee.

Each Program of Work for the doctoral degree must include at least four advanced courses in physics; a list of acceptable courses is maintained by the Graduate Studies Subcommittee. The program must also include three courses outside the student's area of specialization. One of these must be an advanced physics course; another must be outside the Department of Physics; the third may be either an advanced physics course or a course outside the Department of Physics. A dissertation is required of every candidate, followed by a final oral examination covering the dissertation and the general field of the dissertation.

Graduate Courses

The faculty has approval to offer the following courses in the academic years 2017–2018 and 2018–2019; however, not all courses are taught each semester or summer session. Students should consult the *Course Schedule* to determine which courses and topics will be offered during a particular semester or summer session. The *Course Schedule* may also reflect changes made to the course inventory after the publication of this catalog.

PHY 380L. Plasma Physics I.
Particle drifts, equations for plasmas, magnetohydrodynamics, waves and instabilities in the two-fluid model, Vlasov equation, Landau damping, controlled thermonuclear research, plasma diagnostics. Three lecture hours a week for one semester. Prerequisite: Graduate standing.

PHY 380M. Plasma Physics II.
Plasma containment, stability theory in fluid models, derivation of Vlasov and Fokker-Planck equations, the dielectric tensor, velocity space and gradient instabilities, Nyquist diagrams. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 380L or consent of instructor.

PHY 380N. Experimental Physics.
Experimental work to provide exposure to physics research techniques. Eighteen laboratory hours a week for one semester. Prerequisite: Graduate standing and concurrent enrollment in Physics 390.

PHY 380T. Advanced Study in Physics.
Not open to physics majors. Special topics for physics teachers. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, a bachelor's degree in science or mathematics, and consent of the graduate adviser.

PHY 381C. Computational Physics.
Dynamical and statical descriptions and solutions of many-body, nonlinear physical systems by computation. Theory of computation and applications to various branches of physics. Three lecture hours a week for one semester. Prerequisite: Graduate standing; and Physics 385K and 387K, or consent of instructor.

PHY 381M. Methods of Mathematical Physics I.
Same as Computational Science, Engineering, and Mathematics 385M. Theory of analytic functions; linear algebra and vector spaces; orthogonal functions; ordinary differential equations; partial differential equations; Green's functions; complex variables. Three lecture hours a week for one semester. Computational Science, Engineering, and Mathematics 385M and Physics 381M may not both be counted. Prerequisite: Graduate standing.

PHY 381N. Methods of Mathematical Physics II.
Same as Computational Science, Engineering, and Mathematics 385N. Continuation of Computational Science, Engineering, and Mathematics 385M and Physics 381M. Topology, functional analysis, approximation methods, group theory, differential manifolds. Three lecture hours a week for one semester. Computational Science, Engineering, and Mathematics 385N and Physics 381N may not both be counted. Prerequisite: Graduate standing; and Computational Science, Engineering, and Mathematics 385M or Physics 381M.

PHY 382M. Fluid Mechanics.
Flow of ideal and viscous fluids; introduction to turbulence; boundary layers; sound and shock waves. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 381M, 385K, and 387K.

PHY 382N. Nonlinear Dynamics.
Basic concepts of evolution and stability, examples of instabilities, low dimensional dynamical systems, chaos, characterization of temporal chaos, pattern formation, Hamiltonian systems. Three lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

PHY 382P. Biophysics I.
The cell, small molecules and chemical kinetics, forces on the molecular scale, proteins, lipids and membranes, biopolymers, neurons and electrical signal transduction, and complex pattern formation in cells and cell aggregates. Three lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

PHY 382Q. Biophysics II.
Advanced biophysics with emphasis on biologically relevant questions addressed with physical approaches. Biopolymer mechanics, protein-nucleic acid interaction, protein structure and dynamics, membrane dynamics, cytoskeletal dynamics, motor proteins, cell shape and motility, cell communication, tissue mechanics. Three lecture hours a week for one semester. Prerequisite: Graduate standing; and Physics 382P or consent of instructor.

PHY 382S. Seminar in Nonlinear Dynamics.
Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 385K. Classical Mechanics.
Classical and relativistic Hamiltonian mechanics; Hamilton-Jacobi theory; Lagrangian mechanics for continuous media; symmetry principles and conservation laws. Three lecture hours a week for one semester. Prerequisite: Graduate standing.

PHY 385L. Statistical Mechanics.
Equilibrium statistical mechanics; introduction to nonequilibrium concepts; ensembles; classical and quantum gases; statistical physics of solids. Three lecture hours a week for one semester. Prerequisite: Graduate standing, and Physics 385K or consent of instructor.

PHY 385S. Seminar in Statistical Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 385T. Special Topics in Statistical Physics.
Topics to be announced. Three lecture hours a week for one semester. With consent of the graduate adviser, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

PHY 386K. Physics of Sensors.
Physical principles of acoustic, optical, electromagnetic, radiation, and motion sensors. Three lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

PHY 386N. Technical Seminar.
Physics for applied and industrial purposes. Three lecture hours a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of the graduate adviser.

PHY 386S. Seminar in Applied Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 387K. Electromagnetic Theory I.
Electrostatics and magnetostatics; boundary value problems; Maxwell's equations; plane waves; wave guides; diffraction; multipole radiation. Three lecture hours a week for one semester. Prerequisite: Graduate standing.

PHY 387L. Electromagnetic Theory II.
Magnetohydrodynamics and plasmas; relativity; collisions of charged particles; radiation from moving charges; radiation damping. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 387K.

PHY 387M. Relativity Theory I.
Tensor calculus; Riemannian geometry; geometry of Minkowski space-time; special relativity theory. Three lecture hours a week for one semester. Offered in the fall semester only. Prerequisite: Graduate standing and Physics 387K.

PHY 387N. Relativity Theory II.
General relativity theory; gravitational field equations; weak field approximations; Schwarzschild solution, observable consequences; other topics. Three lecture hours a week for one semester. Offered in the spring semester only. Prerequisite: Graduate standing and Physics 387M.

PHY 388M. Graduate Colloquy.
Reviews of current topics in physics research. Three lecture hours a week for one semester. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

PHY 388S. Seminar in Teaching Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 389K. Quantum Mechanics I.
Hilbert space and operators; Schroedinger and Heisenberg equations; solutions for systems in one and three dimensions; theory of spin and orbital angular momentum; the effect of symmetries; approximation techniques; elementary scattering theory. Three lecture hours a week for one semester. Prerequisite: Graduate standing.

PHY 389L. Quantum Mechanics II.
Perturbation techniques; systems of identical particles; quantum theory of radiation; emission and absorption of photons; selection rules; life times; scattering theory for light and particles, S-matrix; relativistic corrections to electron motion. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 389K.

PHY 190, 290, 390, 690, 990. Graduate Research.
For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. May not be counted toward the master's degree in physics. Prerequisite: Graduate standing, and written consent of instructor filed with the graduate adviser.

PHY 391M. Nonlinear Plasma Theory.
Quasi-linear theory, weak turbulence, large amplitude waves, plasma radiation, shock waves, shock structure, computer techniques. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 380L.

PHY 391S. Seminar in Plasma Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 391T. Special Subjects in Plasma Physics.
Subjects to be announced. Three lecture hours a week for one semester. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing, Physics 380L, and consent of instructor.

PHY 391U. Seminar in Plasma Theory.
Current topics in plasma theory. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 392K. Solid-State Physics I.
Lattice vibrations and thermal properties of solids; band theory of solids; transport properties of metals and semiconductors; optical properties; magnetic properties; magnetic relaxation; superconductivity. Three lecture hours a week for one semester. Prerequisite: Graduate standing, Physics 389K, and Physics 375S or the equivalent.

PHY 392L. Solid-State Physics II.
Elementary excitations: phonons, electrons, spin waves; interactions: phonon-phonon, electron-electron, electron-phonon; theory of metals and semiconductors; transport theory; optical properties. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 392K.

PHY 392N. Many-Body Theory.
Overview of many-body theory; second quantization; Green's functions and Feynman diagrams; finite-temperature, imaginary-time Green's functions; the disordered metal; path integrals; broken symmetries; and local moments. Three lecture hours a week for one semester. Prerequisite: Graduate standing and consent of instructor.

PHY 392S. Seminar in Solid-State Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 392T. Special Topics in Solid-State Physics.
Topics to be announced. Three lecture hours a week for one semester. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing, Physics 392K, and consent of instructor.

PHY 393S. Seminar in Relativity.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 393T. Special Topics in Relativity.
Topics to be announced. Three lecture hours a week for one semester. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

PHY 394U. Special Topics in Theoretical Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

PHY 395. Survey of Atomic and Molecular Physics.
Spectra of atoms and diatomic molecules; quantum electronics; experimental techniques. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

PHY 395K. Nonlinear Optics and Lasers.
Gaussian beam optics, interaction of electromagnetic radiation with matter, semiclassical laser theory, experimental laser systems, nonlinear optical susceptibilities, harmonic generation, wave mixing, electro-optic and acousto-optic effects, coherent transient effects, optical breakdown, laser-plasma interactions. Three lecture hours a week for one semester. Prerequisite: Graduate standing, and either Physics 387K and 389K or consent of instructor.

PHY 395M. Laser Physics.
Continuation of Physics 395K. Advanced atomic physics of various laser systems, optical coherence and diffraction theory, pulse propagation and dispersion effects, advanced laser oscillator and amplifier physics, laser amplifier chain design, and chirped-pulse amplification. Three lecture hours a week for one semester. Prerequisite: Graduate standing, Physics 387K, 389K, and 395K, and consent of instructor.

PHY 395S. Seminar in Atomic and Molecular Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 395T. Special Topics in Atomic and Molecular Physics.
Topics to be announced. Three lecture hours a week for one semester. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

PHY 396J. Introduction to Elementary Particle Physics.
Historical introduction to elementary particles, elementary particle dynamics, relativistic kinematics, symmetries, bound states, the Feynman calculus, quantum electrodynamics, electrodynamics of quarks and hadrons, quantum chromodynamics, weak interactions, gauge theories. Three lecture hours a week for one semester. Prerequisite: Graduate standing, Physics 389K, and knowledge of special relativity and scattering.

PHY 396K. Quantum Field Theory I.
Quantization of the Klein-Gordon, Dirac, and electromagnetic field theories; theory of interacting fields, perturbation theory, and renormalization. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 389K.

PHY 396L. Quantum Field Theory II.
Path-integral formalism, massless particles, electrodynamics, nonperturbative methods, one-loop calculations in quantum electrodynamics, general renormalization theory, soft photons, bound statics in quantum electrodynamics. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 396K.

PHY 396P. String Theory I.
Introduction to string theory and conformal field theory. The free string, conformal invariance and conformal field theory, supersymmetry and string interactions. Three lecture hours a week for one semester. Prerequisite: Graduate standing, and Physics 396K or the equivalent or consent of instructor.

PHY 396Q. String Theory II.
Advanced conformal field theory, perturbative string theory and compactification. Introduction to nonperturbative aspects of string theory. Three lecture hours a week for one semester. Prerequisite: Graduate standing and Physics 396P.

PHY 396S. Seminar in Particle Physics.
Topics to be announced. Three lecture hours a week for one semester. With consent of instructor, any topic may be repeated for credit. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 396T. Special Topics in Particle Physics.
Topics to be announced. Three lecture hours a week for one semester. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

PHY 396U. Theory Group Seminar.
Seminars in theoretical physics. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 397K. Nuclear Physics.
Systematics of stable nuclei; nuclear structure; decay of the nucleus; cross sections and reaction mechanisms; the elementary particles. Three lecture hours a week for one semester. Prerequisite: Graduate standing, and Physics 389K or consent of instructor.

PHY 397S. Seminar in Nuclear Physics.
Topics to be announced. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing and consent of instructor.

PHY 397T. Special Topics in Nuclear Physics.
Topics to be announced. Three lecture hours a week for one semester. With consent of instructor, may be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

PHY 197U. Graduate Seminar in Nanoscience.
Various seminar topics in nanoscience. One lecture hour a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing.

PHY 698. Thesis.
The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing in physics and written consent of the supervising professor filed with the graduate adviser; for 698B, Physics 698A.

PHY 398T. Supervised Teaching in Physics.
A review of physics teaching strategies, administrative procedures, and classroom responsibilities. Includes a review and critique of each participant's classroom teaching. Three lecture hours a week for one semester. Prerequisite: Graduate standing and appointment as a teaching assistant.

PHY 399R, 699R, 999R. Dissertation.
Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree and written consent of instructor filed with the graduate adviser.

PHY 399W, 699W, 999W. Dissertation.
Offered on the credit/no credit basis only. Prerequisite: Physics 399R, 699R, or 999R; and written consent of instructor filed with the graduate adviser.

Today's Date: _____

Advising Sheet for Summer & Fall 2017 Registration

Fill in the sheet (please print) and turn it in to Dr. Keto during your advising time. Keep a note for yourself of the courses you will register for since you will be handing in this form. If you make a change in registration for a core course or degree-required course you should inform Dr. Keto of the change via email, immediately. **PLEASE WRITE CLEARLY, thank you.**

Name: _____ **EID:** _____

Address: _____

Phone: _____ **Email:** _____

Name of Supervisor (leave blank if you do not have one): _____

Field of Interest: _____ **Research** (Check One)**:** ❒ Experimentalist ❒ Theorist

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Proposed Course Work for Fall 2017*

Course #	Unique #	Title of Course	Instructor

*Courses are listed on the back of this form. If you are taking PHY x90, please write in the name of the faculty member who will supervise your research. [You will also need to fill out an x90 Form, have it signed by the faculty member and return it to Matt].

Proposed Course Work for Summer 2017**

(Leave this section blank if you do not intend to register for the Summer)

Course #	Unique #	Title of Course	Instructor

**If you anticipate you will have a summer TA or GRA position you need to have at least 3 hours of summer registration. The course can be a first session (f), second session (s), nine week (n) or whole (w) session course. It does not have to coincide with the dates of your appointment.

After you have registered, check your schedule on UTDirect to make sure you are in the correct courses. The letter "Z" next to the course indicates that you are registered on a Credit/No Credit basis (some courses are only offered on this basis). You should not take any core or required course on the Credit/No Credit basis. Report any errors in registration immediately to Matt. You have until the 4th Class Day (1st Class Day in the Summer) to make changes to your schedule freely (to add or drop a class), between the 4th and the 12th Class Day you will need Professor Keto's signature as well as that of the course's instructor. If you are in candidacy, you must be continuously registered in 399, 699, or 999 (you register for the class ending in "R" in your first semester of candidacy only, and the one ending in "W" thereafter).

I have read and understand the preceding notices/policies: _____ (initial)

Graduate Adviser's Approval: _____

Degree Planning Checklist
Ph.D. in Physics

The Core Courses:

No grade below B- and an average grade of B+ is required for The Core. Up to two Core Courses may be fulfilled by taking the Final Exam, however, the grade on the final does not factor into the required average and the exam may only be attempted once. (Only one attempt is allowed for each course, and the examination must be taken no later than the third semester to leave time to take the course within the two-year period.)

- o PHY 385K Classical Mechanics [Grade: _____]
- o PHY 385L Statistical Mechanics [Grade: _____]
- o PHY 387K Electromagnetic Theory I [Grade: _____]
- o PHY 389K Quantum Mechanics I [Grade: _____]

The Modern Methods of Experimental Physics:

You must demonstrate acquaintance with modern methods of experimental physics. Physics 380N meets this requirement, as does laboratory work done while a graduate student. Other acceptable evidence must be considered individually. PHY 380N is required of all theorists. Experimentalists may use their grade in PHY 380N to replace a low grade in one of The Core Courses (in this instance 380N must be done outside your advisor's lab).

- o PHY 380N Experimental Physics [Grade: _____]

OR o Participation in Experimental Program (for experimentalists)

The Oral Qualifying Examination, Program of Work, & Application for Candidacy:

See separate page of instructions.

The Advanced Courses & Supporting Course Work:

Four Advanced Courses (see reverse for full listing):

- o In-Field Advanced Courses: _____
  _____
  _____

Supporting Work (see reverse for guidelines):

- o Out-of-Field Advanced Course: _____
- o Out-of-Department Course: _____
- o Additional Supporting Course: _____

The Dissertation & Its Defense:

Upon Advancing to Candidacy, you must be continuously enrolled in one of the following: PHY 399, 699, or 999. The first semester of candidacy you must be enrolled in the "R" version of the course (PHY 399R, 699R, or 999R); R must not be repeated. Thereafter, you must be enrolled in the "W" version of the course (PHY 399W, 699W, or 999W). Extensive information regarding both the final preparation and defense of the dissertation is available on The Graduate School's website.

- o PHY X99R
- o PHY X99W

Advanced Courses

Atomic, Molecular, and Optical Physics
- PHY 395 Survey of Atomic & Molecular Physics
- PHY 395K Nonlinear Optics and Lasers
- PHY 395M Laser Physics

Condensed Matter
- PHY 392K Solid State Physics I
- PHY 392L Solid State Physics II
- PHY 392N Many-Body Theory

Cosmology & Strings (The Weinberg Theory Group)
- PHY 396K Quantum Field Theory I
- PHY 396L Quantum Field Theory II
- PHY 396P String Theory I
- PHY 396Q String Theory II

High Energy Physics
- PHY 396J Introduction to Elementary Particle Physics

Nonlinear Dynamics and Biophysics
- PHY 382M Fluid Mechanics
- PHY 382N Nonlinear Mechanics
- PHY 382P Biophysics I
- PHY 382Q Biophysics II

Nuclear Physics
- PHY 397K Introduction to High Energy Physics & RHIC I
- PHY 397L Introduction to High Energy Physics & RHIC II

Plasma and Fusion
- PHY 380L Plasma Physics I
- PHY 380M Plasma Physics II

Relativity and Gravitation
- PHY 387M Relativity Theory I
- PHY 387N Relativity Theory II

Non-Specialized*:
- PHY 380N Experimental Physics
- PHY 386K Physics of Sensors**
- PHY 387L Electromagnetic Theory II
- PHY 389L Quantum Mechanics II
- PHY 381N Methods of Mathematical Physics II

*The courses under this category cannot be used as an Out-of-Field Advanced Course by anyone.
**Only students in Cosmology & Strings and Biophysics may take this course as an Out-of-Field Advanced Course.

Supporting Courses

Supporting Courses must be drawn from courses offered *outside* the Department of Physics, including, but not limited to, courses offered in: Astronomy, Biological Sciences, Chemistry, Engineering, Geological Sciences, and Mathematics. *All* such courses *must be technical* in nature.

PHY 381M (Methods of Mathematical Physics I) may be taken as a Supporting Course if (and *only if*) it is taken under its co-listing as CAM 381M.

Undergraduate Catalog Degree Information and Advising Worksheets.

Bachelor of Science in Physics

All aspects of the physical universe are of interest to the physicist, who seeks to understand not only the smallest forms of matter and the rich phenomena present in our everyday lives but also the universe itself. Physics has played a critical role in human technological and intellectual development during the twentieth century. The tools of the physicist—observation, imagination, model building, prediction, and deduction—will enable physics to continue this influence into the new century. The Bachelor of Science in Physics degree program is designed to provide the skills, understanding, and outlook required for participation in the discovery of new knowledge about nature.

The Bachelor of Science in Physics program is balanced and broad. It is designed to give the student a strong foundation for graduate study or work in physics and, with additional training, for work in a variety of other areas, such as astronomy, astrophysics, biophysics, chemical physics, computer science, engineering, geophysics, mathematics, medicine, physics teaching, and space sciences. Students who end their formal training with the bachelor's degree may seek employment in industry, in national laboratories, or in teaching; they should consider the options in computation, radiation physics, space sciences, biophysics, and teaching, which augment the broad instruction provided by the basic Bachelor of Science in Physics. For those who plan to teach physics in secondary school, the teaching option provides the courses needed for certification.

Students who plan to follow Option VI, Physics Honors, must be admitted to the Dean's Scholars Honors Program.

Prescribed Work Common to All Options

In the process of fulfilling degree requirements, all students must complete:

1. Core curriculum
2. Skills and experience flags:
   a. Writing: two flagged courses beyond Rhetoric and Writing 306 or its equivalent, including one at the upper-division level
   b. Quantitative reasoning: one flagged course
   c. Global cultures: one flagged course
   d. Cultural diversity in the United States: one flagged course
   e. Ethics and leadership: one flagged course
   f. Independent inquiry: one flagged course

Courses with flags are identified in the *Course Schedule*. They may be used simultaneously to fulfill other requirements, unless otherwise specified.

3. Options I–IV and VII: one of the following foreign language/culture choices: (Students in Options V and VI are exempt from this requirement)
    a. Beginning level proficiency coursework, or the equivalent, in a foreign language
    b. First course in a foreign language and a three-semester-hour course in the culture of the same language area
    c. Two three-semester-hour courses in one foreign culture area; the courses must be chosen from an approved list available in the dean's office and the college advising centers
4. Thirty-six semester hours of upper-division coursework
5. At least 21 semester hours of upper-division coursework, including at least 12 semester hours of upper-division coursework in physics, must be completed in residence at the University

Prescribed Work Common to All Options for Each

Option I: Physics

This option is designed to give the student a strong foundation for graduate study or work in physics and for further study or work in a variety of other areas.

6. Chemistry 301 or 301H, and 302 or 302H
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it
8. Physics 301, 316, 116L, 315, and 115L
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K; only courses at the level of calculus and above may be counted toward the total number of hours required for the degree
10. Physics 336K, 352K, 353L, 355, 362K, 362L, 369, 373, and 474, or their equivalents
11. Enough additional coursework to make a total of 126 semester hours

Option II: Computation

This Option is designed to provide the necessary foundation and hands-on skill in computation for the student who plans a career or further study in computational physics or computer science. Students who complete this option may simultaneously fulfill some of the requirements of the Scientific Computation and Data Sciences Certificate.

6. Chemistry 301or 301H, and 302 or 302H
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it
8. Physics 301, 101L, 316, 116L, 315, and 115L
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics or statistics and

data sciences; Statistics and Data Sciences 329C and Mathematics 362K are recommended; only courses at the level of calculus and above may be counted toward the total number of hours required for the degree

10. Physics 329, 336K, 338K, 352K, 353L, 355, 369, and 373, or their equivalents
11. One of the following scientific computation options:
    a. Computer Science 303E; Computer Science 313E or Statistics and Data Sciences 322; and two courses from two of the areas listed below:
        i. Numerical methods: Chemical Engineering 348, Computer Science 323E, 323H, 367, Mathematics 348, Statistics and Data Sciences 335
        ii. Statistical methods: Biomedical Engineering 335, Mathematics 358K, 378K
        iii. Other computing topics: Computer Science 324E, 327E, 329E, 377, Mathematics 346, 362M, 368K, 372K, 376C, Mechanical Engineering 367S, Statistics and Data Sciences 329D, 374C, 374D, 374E
    b. Twelve semester hours chosen from Electrical Engineering 306, 312, 316, 319K, and 422C
12. Enough additional coursework to make a total of 126 semester hours

Option III: Radiation Physics

This Option is designed to provide the necessary foundation for the student who plans a career or further study in nuclear engineering, radiation engineering, or health physics.

6. Chemistry 301 or 301H, and 302 or 302H
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it
8. Physics 301, 101L, 316, 116L, 315, and 115L
9. Mathematics 408C and 408D or the equivalent, 427Jor 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K; only courses at the level of calculus and above may be counted toward the total number of hours required for the degree
10. Twenty-four semester hours of upper-division coursework in physics, including Physics 336K, 352K, 353L, 355, 362L, 369, and 373, or their equivalents
11. Eighteen semester hours of upper-division coursework in mechanical engineering, consisting of Mechanical Engineering 337C, 337F, 337G, 361E, 361F, and 336P
12. Enough additional coursework to make a total of 126 semester hours

Option IV: Space Sciences

This Option is designed to provide the necessary foundation for the student who plans a career or further study in space sciences.

6. Chemistry 301 or 301H, and 302 or 302H
7. Six semester hours in biology, geological sciences, or astronomy; a course may not be used to fulfill this requirement if it cannot be counted toward major requirements in the department that offers it
8. Physics 301, 101L, 316, 116L, 315, and 115L

9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K; only courses at the level of calculus and above may be counted toward the total number of hours required for the degree
10. Physics 329, 336K, 352K, 353L, 355, 362K, 369, and 373, or their equivalents
11. Either 15 semester hours of upper-division coursework in aerospace engineering or 12 hours in aerospace engineering and three additional hours of upper-division coursework in physics
12. Enough additional coursework to make a total of 126 semester hours

Option V: Teaching

This Option is designed to fulfill the course requirements for certification as a middle grades or secondary school science teacher in Texas; the student chooses composite science certification with physics as the primary teaching field, physical sciences certification, physics/mathematics certification, or mathematics, physical science, and engineering certification. However, completion of the course requirements does not guarantee the student's certification. For information about additional requirements, students should consult the UTeach-Natural Sciences academic adviser.

6. Physics 301, 101L, 316, 116L, 315, and 115L
7. Mathematics 408C and 408D or the equivalent, 427J or 427K, and 427L
8. At least 18 semester hours of upper-division coursework in physics, consisting of Physics 341 (Topic 7: *Research Methods: UTeach*), 353L, 355, and three of the following courses: Physics 329, 333, 336K, 338K, 352K, 373, Science 365; with the consent of the UTeach-Natural Sciences undergraduate adviser, an upper-division physics course that includes a substantial research component may be substituted for Physics 341
9. History 329U or Philosophy 329U
10. The requirements of one of the following certification areas:
    a. For composite science certification:
        i. Biology 311C and 311D
        ii. Chemistry 301 or 301H and 302 or 302H
        iii. Six hours of coursework in geological sciences; courses intended for non-science majors may not be counted toward this requirement
        iv. Enough additional approved coursework in biology, chemistry, or geological sciences to provide the required 12 hours in a second field
    b. For physical sciences certification:
        i. Chemistry 301 or 301H, 302 or 302H, 204 or 317, 353, 153K, 154K, 354L, and 455 or 456
        ii. Three additional hours of upper-division coursework in physics
    c. For physics/mathematics certification: Mathematics 315C, 325K, 333L, 341 or 340L, 358K, 362K, 360M or 375D
    d. For mathematics, physical science, and engineering certification:
        i. Mathematics 315C, 325K, 333L, 358K, and 362K
        ii. Chemistry 301 or 301H, 302 or 302H, and 204

iii. Chemical Engineering 379 (Topic: *Fundamentals of Engineering and Design*), 379 (Topic: *Engineering Energy Systems*), and Mechanical Engineering 379M (Topic: *Design of Machines and Systems*)

11. Eighteen semester hours of professional development coursework consisting of:

    a. Curriculum and Instruction 651S
    b. Curriculum and Instruction 365C or UTeach-Natural Sciences 350
    c. Curriculum and Instruction 365D or UTeach-Natural Sciences 355
    d. Curriculum and Instruction 365E or UTeach-Natural Sciences 360
    e. UTeach-Natural Sciences 101, 110, and 170

12. Students seeking middle grades certification must complete the following courses: Educational Psychology 363M (Topic 3: *Adolescent Development*), or Psychology 301 and 304; and Curriculum and Instruction 339E
13. Enough additional coursework to make a total of at least 126 semester hours

Option VI: Physics Honors

6. Breadth requirement: Biology 315H and 325H, Chemistry 301H and 302H, and Mathematics 427J or 427K and 427L; at least one of the math courses must be a designated honors section; credit earned by examination may not be counted toward this requirement
7. Mathematics 340L and 361
8. Physics 301, 101L, 316, 116L, 315, and 115L
9. Physics 336K, 352K, 353L, 355, 362K, 362L, 369, 373, and 474
10. A section of Undergraduate Studies 302 or 303 that is approved by the departmental honors adviser
11. A section of Rhetoric and Writing 309S that is restricted to students in the Dean's Scholars Honors Program
12. Physics 379H and a three-semester-hour upper-division research course approved by the departmental honors adviser
13. Ten additional semester hours of coursework approved by the departmental honors adviser
14. Six semester hours of coursework in the College of Liberal Arts or the College of Fine Arts
15. Enough additional coursework to make a total of 120 semester hours

Option VII: Biophysics

6. Chemistry 301 or 301H and 302 or 302H
7. Either Biology 311C, 311D, and 325 or Biology 315H and 325H; Biology 206L
8. Physics 301, 101L, 316, 116L, 315, and 115L
9. Mathematics 408C and 408D or the equivalent, 427J or 427K and 427L, and six additional semester hours of upper-division coursework in mathematics; the following courses are recommended: Mathematics 340L, 361, and 362K
10. Physics 336K, 345, 352K, 353L, 355, 369, and 373 or their equivalents
11. Either Chemistry 320M or 328M, and Biochemistry 369
12. Complete one of the following areas:

a. Cell Biology: Biology 320
b. Microbiology: Biology 326R
c. Developmental Biology: Biology 349
d. Neurobiology: Either Neuroscience 365R or Neuroscience 371M
e. Virology: Biology 330
f. Computation: Statistics and Data Sciences 335 and Biology 337J

A list of recommended biology laboratory courses that complement the lecture courses listed in 12a through 12e are available in the advising center and the dean's office.

13. Enough additional coursework to make a total of 126 semester hours

Special Requirements

Students in all options must fulfill both the University's General Requirements for graduation and the college requirements. They must also earn a grade of at least *C*- in each mathematics and science course required for the degree, and a grade point average in these courses of at least 2.00. More information about grades and the grade point average is given in the *General Information Catalog.*

To graduate and be recommended for certification, students who follow the Teaching Option must have a University grade point average of at least 2.50. They must earn a grade of at least *C*- in the supporting course in requirement 9 and in each of the professional development courses listed in requirement 11 and must pass the final teaching portfolio review; those seeking middle grades certification must also earn a grade of at least *C*- in each of the courses listed in requirement 12. Information about the portfolio review and additional teacher certification requirements is available from the UTeach-Natural Sciences academic adviser.

To graduate under Option VI, students must remain in good standing in the Dean's Scholars Honors Program, must earn grades of at least *A*- in the departmental research and thesis courses described in requirement 8 above, and must present their research in an approved public forum, such as the college's annual Undergraduate Research Forum.

Related Fields of Study

- Bachelor of Arts, Plan I
- Bachelor of Science and Arts
- Bachelor of Science in Astronomy
- Bachelor of Science in Biochemistry
- Bachelor of Science in Biology
- Bachelor of Science in Chemistry
- Bachelor of Science in Computer Science
- Bachelor of Science in Environmental Science
- Bachelor of Science in Human Development and Family Sciences
- Bachelor of Science in Mathematics
- Bachelor of Science in Medical Laboratory Science
- Bachelor of Science in Neuroscience

- Bachelor of Science in Nutrition
- Bachelor of Science in Physics
- Bachelor of Science in Public Health
- Bachelor of Science in Textiles and Apparel

On this page

College of Natural Sciences

Advising Worksheet for Spring 18

This system serves to help students and advisors with the advising process. Your advisor will have access to your proposed course choices and will review them.

This worksheet is a planning and communication tool. You still must register for classes during your assigned registration time.

Student name:
E-mail address:

This e-mail address is the one we will use to contact you. If it is inaccurate, you can correct it using the Address Change page.

Proposed Graduation Semester:

(Note: This will open a new window. On some browsers, you may have to reload this page to see the new semester after you change it.)

Degree Sought:

Second Major / Minor Description:

Transcript-Recognized Certificate
Please indicate if you are completing a transcript-recognized certificate program:
Certificate Sought:

Health Profession
Please indicate if you are a Pre-Med Student:
Pre-Med Area of Interest:

Courses I Plan To Take

For each course you plan to take, select a department abbreviation from the pull-down list. Type in the course number or the word "elect" for an unspecified elective. If you have more questions about course numbers, you can check the catalog or course schedule. The course schedule for the current advising period may not yet be available.

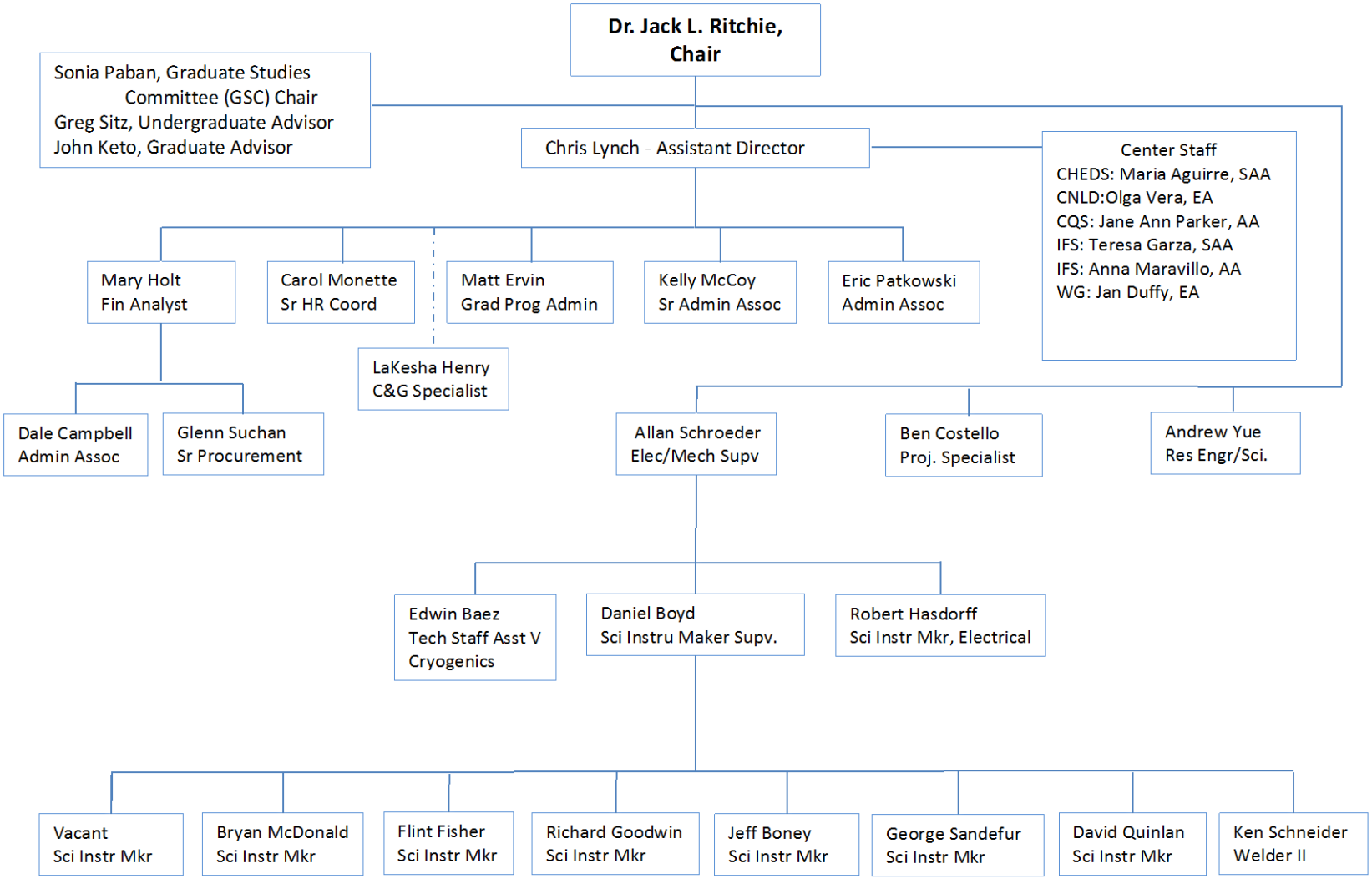
	Proposed Courses (Spring 18):
Scroll down and select a Dept Abbr	Type a Course Number (e.g. 305G)

Please give any additional information that you think will help your advisor in reviewing your worksheet.

Degree Profile: -

This form is for advising purposes only and is separate from the registration process. You may make changes to this form until it has been approved by your advisor.

DEPARTMENT OF PHYSICS ORGANIZATIONAL CHART



Standing Committees of the Department of Physics

Fall 2017 – Spring 2018

Budget Council Advisory Committee

Alex Demkov
Richard Fitzpatrick
Manuel Hegelich
Elaine Li
John Markert
Harry Swinney

Colloquium

Karol Lang, chair
Todd Ditmire
Manfred Fink
Richard Hazeltine
Qian Niu

Faculty Advancement

Karol Lang, chair
Mike Downer
Allan Macdonald
Mark Raizen
Jack Ritchie

Graduate Studies Sub-Committee (GSSC)

Sonia Paban, chair
Alex Demkov
Greg Fiete
E.L. Florin
Phil Morrison
John Keto

Graduate Student Recruitment

Richard Fitzpatrick, chair
Tim Andeen
Alex de Lozanne
Jacques Distler
Dan Heinzen
John Keto
Keji Lai

Graduate Student Welfare

E.L Florin, chair
Vadim Kaplunovsky
John Keto
Maxim Tsoi
Zhen Yao

International Initiatives

Elaine Li, chair
Ken Gentle
Vernita Gordon
Manuel Hegelich
Qian Niu
Ken Shih

Nominations

Harry Swinney, chair
Jim Chelikowsky
Richard Matzner
Ray Orbach
Roy Schwitters

Outreach and Diversity

Christina Markert, chair
Tim Andeen
Willy Fischler
Can Kilic
Linda Reichl

Teaching Excellence

Michael Marder, chair
Vernita Gordon
John Markert
Greg Sitz
John Yeazell

Undergraduate Advising

Greg Sitz, chair
Duane Dicus
Michael Marder
John Markert
Linda Reichl

Undergraduate Affairs

Greg Sitz, chair
Duane Dicus
Phil Morrison
Sonia Paban
John Yeazell

Ad Hoc Committees of the Department of Physics

Fall 2017 – Spring 2018

Assistant Professor Search

Harry Swinney, chair
Alex de Lozanne
Phil Morrison
Peter Onyisi
Linda Reichl
Jack Ritchie, *ex officio*

Graduate Curriculum Review

Greg Fiete, chair
Keji Lai
Karol Lang
Andrew Potter
Mark Raizen

21st Century Physics Undergraduate Curriculum Review

Can Kilic, chair
Keely Finkelstein, STEM consultant (CNS/TIDES)
Vernita Gordon
Michael Marder
Greg Sitz
John Yeazell

Departmental Events in 2016-2017

Date	Title
September 1, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Robert Kaindl, Lawrence Berkeley National Laboratory, "Ultrafast snapshots of electronic and vibrational dynamics in complex materials," 12:30pm, RLM 11.204
September 1, 2016	THEORY GROUP BROWN BAG MEETING: Organizational Meeting, 12:30pm, RLM 9.222
September 1, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
September 2, 2016	PHYSICS EDUCATION FORUM: Welcome Session Meeting, 3:00pm, RLM 5.114
September 6, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Zhenyu Zhang, University of Science and Technology of China, "Atomistic Growth Mechanisms and Property Optimization of Two-Dimensional Materials: Uniqueness and Commonalities," 12:30pm, RLM 11.204
September 6, 2016	THEORY GROUP SEMINAR: Tom Rudelius, Harvard University, "Strong Forms of the Weak Gravity Conjecture," 2:00pm, RLM 7.104
September 7, 2016	GEOMETRY AND STRING THEORY SEMINAR: Prof. Dan Freed, UT-Austin Mathematics, "TBA," 12:00pm, RLM 8.136
September 7, 2016	PHYSICS COLLOQUIUM: Prof E.L. Florin, UT-Austin, "New eyes for looking at soft matter on the nanometer scale," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
September 8, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Andrew Potter, UT-Austin, "Symmetry and topology in gapless matter and far from equilibriu," 12:30pm, RLM 11.204
September 8, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
September 8, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
September 9, 2016	PHYSICS EDUCATION FORUM: Prof. Michael Marder, UT-Austin, "Asking physics, chemistry, computer science, and math majors about teaching high school," 3:00pm, RLM 5.114
September 12, 2016	NONLINEAR DYNAMICS SEMINAR: Dr. Carey W. King, UT Jackson School of Geosciences and the UT Energy Institute, "Understanding Energy and the Structure of the Economy," 1:00pm, RLM 11.204
September 12, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
September 12, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Dr. Peter Onyisi, UT-Austin, "Studies and Searches with the 13 TeV LHC," 4:00pm, RLM 9.222
September 13, 2016	THEORY GROUP SEMINAR: Dr. Ali Masoumi, Tufts University, "How rare are the vacua in large-dimensional landscapes?" 2:00pm, RLM 7.104
September 14, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Bei Jia, UT-Austin, "Topological Phases of Matter," 12:00pm, RLM 8.136

September 14, 2016	PHYSICS COLLOQUIUM: Dr. Charles Ivey, Co-Founding Limited Partner of SoftSearch Investments, "Your Tool Box is your most Valuable Asset; Why Physics is such an advantage," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
September 15, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Nikolai Sinitsyn, LANL, "Spin Noise Spectroscopy of Semiconductor Quantum Dots," 12:30pm, RLM 11.204
September 15, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
September 16, 2016	PHYSICS EDUCATION FORUM: Dr. Jill Marshall, Curriculum and Instruction, UT-Austin, "The Science of Designing a Test," 3:00pm, RLM 5.114
September 16, 2016	AMOP SEMINAR: Dr. Roahn Wynar, Federal Bureau of Investigation, "The Einstein FBI File. On the trail of the world's most important pacifist," 4:10pm, RLM 11.204
September 19, 2016	NONLINEAR DYNAMICS SEMINAR: "2-minute Snapshot talks on research by postdocs and students in the Center for Nonlinear Dynamics," 1:00pm, RLM 11.204
September 19, 2016	SPECIAL COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Dean Driebe, ULB, "The generalized second law and work extraction from nonequilibrium states," 3:00pm, RLM 13.202
September 19, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
September 19, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Dr. Pawel Nadel-Turonski, Thomas Jefferson National Accelerator Facility, "Probing the cold QCD frontier - physics and detectors for the Electron-Ion Collider," 4:00pm, RLM 9.222
September 20, 2016	THEORY GROUP SEMINAR: Dr. Jack Kearney, Fermi National Accelerator Laboratory, "A (The?) Higgs Vacuum Instability During Inflation," 2:00pm, RLM 7.104
September 20, 2016	PIZZA SEMINAR: Prof. Elaine Li, UT-Austin, "Quantum Dynamics in Atomically Thin Semiconductors!" 5:00pm, RLM 7.104
September 21, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Bei Jia, UT-Austin, "Topological Phases of Matter (Cont.)," 12:00pm, RLM 8.136
September 21, 2016	NONLINEAR DYNAMICS SEMINAR: "2-minute Snapshot talks on research by postdocs and students in the Center for Nonlinear Dynamics," 1:00pm, RLM 11.204
September 21, 2016	THE EMMETT L. HUDSPETH CENTENNIAL LECTURESHIP IN PHYSICS: Dr. David Reitze, Executive Director of LIGO, California Institute of Technology, "Seeing Black: Detecting Gravitational Waves From Binary Black Hole Mergers for the First Time Ever using LIGO," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102). Coffee and cookies will be served at 3:45pm in RLM 4.102
September 21, 2016	PUBLIC LECTURE: Dr. David Reitze, Executive Director of LIGO, California Institute of Technology, "Gravitational Waves, Colliding Black Holes, and Tornadoes in Space-Time: The Dawn of a New Astronomy," 7:30pm, Hogg Memorial Auditorium

September 22, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Philipp Dumitrescu, UT-Austin, "Superconductivity and Nematic Fluctuations in a model of FeSe monolayers: A Determinant Quantum Monte Carlo Study," 12:30pm, RLM 11.204
September 22, 2016	THEORY GROUP BROWN BAG MEETING: Dr. Walter Tangarife, Tel Aviv University, "Title TBA," 12:30pm, RLM 9.222
September 22, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
September 22, 2016	VIP SEMINAR: Prof. Irene Gamba, Mathematics Department, UT-Austin, "Conservative Solvers for Collisional Boltzmann and Landau operators in plasma systems," 4:00pm, RLM 11.204
September 23, 2016	PHYSICS EDUCATION FORUM: Dr. Michael Marder, Department of Physics, UT-Austin, "Asking physics, chemistry, computer science, and math majors about teaching high school," 3:00pm, RLM 5.114
September 23, 2016	AMOP SEMINAR: Nick Stuart, Imperial College London, "Mid-Infrared High-Intensity Lasers for Particle Acceleration," 4:00pm, RLM 11.204
September 26, 2016	NONLINEAR DYNAMICS SEMINAR: Prof. Sungyon Lee, Texas A&M University, "Coupled dynamics of particles and fluid-fluid interfaces," 1:00pm, RLM 11.204
September 26, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
September 27, 2016	THEORY GROUP SEMINAR: Dr. Sandipan Kundu, Cornell University, "Causality constraints in conformal field theory," 2:00pm, RLM 7.104
September 28, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Ben Zvi, UT-Austin Mathematics, "Costello II," 12:00pm, RLM 8.136
September 28, 2016	PHYSICS COLLOQUIUM: Prof. Peter Onyisi, UT-Austin, "Studies and Searches with the 13 TeV Large Hadron Collider," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102)
September 29, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Jim Chelikowsky, UT-Austin, "Addressing Dirac's Challenge: Practical Quantum Theories for Materials," 12:30pm, RLM 11.204
September 29, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
September 29, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
September 30, 2016	PHYSICS EDUCATION FORUM: Prof. Erin Scanlon, Department of Physics, Texas Lutheran University, "Epistemology: This, That, and The Other," 3:00pm, RLM 5.114
October 3, 2016	NONLINEAR DYNAMICS SEMINAR: Prof. Oliver Fringer, Stanford University, "Fluids, Math, Computers, and The Environment," 1:00pm, RLM 11.204
October 3, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
October 4, 2016	THEORY GROUP SEMINAR: Dr. Matt Kleban, New York University, "Inhomogeneous Anisotropic Cosmology and the Provenance of Inflation," 2:00pm, RLM 7.104
October 4, 2016	PIZZA SEMINAR: Prof. Mike Marder, UT-Austin, "Fracking, Fuel and the

	Future," 5:00pm, RLM 7.104
October 5, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Carlos Simpson, CNRS, University of Nice, "Spectral networks and harmonic maps," 12:00pm, RLM 8.136
October 5, 2016	PHYSICS COLLOQUIUM: Prof. Nadya Mason, University of Illinois at Urbana-Champaign, "Designing Superconductivity: Manipulating Interactions in Arrays of Superconducting Islands," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
October 6, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Nadya Mason, University of Illinois at Urbana-Champaign, "Surface State Transport in 3D Topological Insulators," 12:30pm, RLM 11.204
October 6, 2016	THEORY GROUP BROWN BAG MEETING: Dr. Dan Carney, UBC-Vancouver, "Scattering with partial information," 12:30pm, RLM 9.222
October 6, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
October 10, 2016	NONLINEAR DYNAMICS SEMINAR: Sara Cheng, Center for Nonlinear Dynamics, UT-Austin, "Dynamics of Energetic RNAs: Molecular Dynamics Studies of Natural and Synthetic RNA Structures," 1:00pm, RLM 11.204
October 10, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
October 10, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Prof. Nader Mirabolfathi, Texas A&M, "Toward Single-Electron Resolution Phonon-Mediated Ionization Detectors for Dark Matter and Neutrino Experiments," 4:00pm, RLM 9.222
October 11, 2016	THEORY GROUP SEMINAR: Prof. Tao Han, University of Pittsburgh, "Splitting and showering in the electroweak sector," 2:00pm, RLM 7.104
October 11, 2016	PIZZA SEMINAR: Prof. Richard Matzner, UT-Austin, "LARES: Laser-Ranged Satellites and Gravitomagnetism!" 5:00pm, RLM 7.104
October 12, 2016	PHYSICS COLLOQUIUM: Prof. Tao Han, University of Pittsburgh, "Physics Motivations for Future Colliders," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
October 13, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Wei-Cheng Lee, Binghamton University, "Orbital Selective Mott Transition in Thin Film VO2," 12:30pm, RLM 11.204
October 13, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
October 13, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
October 14, 2016	PHYSICS EDUCATION FORUM: Dr. Todd Hunter, The Center for STEM Education, "The Ideal World of the Textbook vs. the Imperfect World of the Lab," 3:00pm, RLM 5.114
October 17, 2016	NONLINEAR DYNAMICS SEMINAR: Adam Rupe, Department of Physics, University of California Davis, "Computational Mechanics of Coherent Structures In Spatiotemporal Systems," 1:00pm, RLM 11.204
October 17, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222

October 17, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Dr. R. Benton Pahlka, The M.D. Anderson Cancer Center, "Nuclear Medicine Imaging Physics at M.D. Anderson Cancer Center," 4:00pm, RLM 9.222
October 18, 2016	THEORY GROUP SEMINAR: Dr. Emil Mottola, Los Alamos National Laboratory, "Scalar Gravitational Waves in the Effective Theory of Gravity," 2:00pm, RLM 7.104
October 18, 2016	PIZZA SEMINAR: Dr. Lanny Ray, Department of Physics, UT-Austin, "Understanding Nature's Glue!" 5:00pm, RLM 7.104
October 19, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Andy Neitzke, UT-Mathematics, "Generalized Global Symmetries," 12:00pm, RLM 8.136
October 19, 2016	PHYSICS COLLOQUIUM: Dr. Emil Mottola, LANL, "Title TBA," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
October 20, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Carlo Canali, Linnaeus University, Sweden, "Challenges and opportunities in first-principles studies of magnetic molecules for molecular quantum spintronic applications," 12:30pm, RLM 11.204
October 20, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
October 20, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
October 21, 2016	PHYSICS EDUCATION FORUM: Dr. James Pennebaker, Department of Psychology, "Rethinking undergraduate education: Curricula, courses, and calendars," 3:00pm, RLM 5.114
October 24, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
October 25, 2016	THEORY GROUP SEMINAR: Dr. Clifford Cheung, Caltech, "Holography and Scattering Amplitudes," 2:00pm, RLM 7.104
October 26, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Ben Zvi, UT-Mathematics, "Costello I," 12:00pm, RLM 8.136
October 26, 2016	PHYSICS COLLOQUIUM: Dr. Elena Caceres, Universidad de Colima and UT-Austin, "Holography and Entanglement," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102). Coffee and cookies will be served at 3:45pm in RLM 4.102
October 27, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Maxim Tsoi, UT-Austin, "Electrically tunable transport and spin current transfer in antiferromagnetic Sr_3Ir_2O_7," 12:30pm, RLM 11.204
October 27, 2016	THEORY GROUP BROWN BAG MEETING: Dr. Elena Caceres, Universidad de Colima and UT-Austin, "Boundary Causality vs Hyperbolicity for Spherical Black Holes in Gauss-Bonnet," 12:30pm, RLM 9.222
October 27, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
October 28, 2016	AMO SEMINAR: Joey Shaw, Department of Physics, UT-Austin, "X-Rays, Gamma-Rays from Laser-Plasma Electron Accelerators," 4:00pm, RLM 11.204
October 31, 2016	NONLINEAR DYNAMICS SEMINAR: Prof. Mark Raizen, UT-Austin, "A new method for efficient isotope separation," 1:00pm, RLM 11.204
October 31, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to

	particle physics phenomenologists, 3:00pm, RLM 9.222
November 1, 2016	THEORY GROUP SEMINAR: Dr. Tim Cohen, University of Oregon, "Naturalness," 2:00pm, RLM 7.104
November 1, 2016	PIZZA SEMINAR: Prof. John Markert, Department of Physics, UT-Austin, "Magnetism and Superconductivity!" 5:00pm, RLM 7.104
November 2, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Peter Koroteev, Perimeter Institute, "Large-n limit of Seiberg-Witten theories," 12:00pm, RLM 8.136
November 2, 2016	PHYSICS COLLOQUIUM: Prof. Thomas Truskett, Department of Chemical Engineering, UT-Austin, "Inverse design of interactions for assembly," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
November 3, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Philip Allen, Stonybrook, "What do we still not understand about thermal conductivity?" 12:30pm, RLM 11.204
November 3, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
November 3, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
November 4, 2016	AMO SEMINAR: Prof. Nirav Mehta, Department of Physics and Astronomy, Trinity University, "Universal few-body physics in one dimension," 4:00pm, RLM 11.204
November 4, 2016	PHYSICS EDUCATION FORUM: Orrin Shindell, Department of Physics, UT-Austin, "Education Reform as Class Warfare," 3:00pm, RLM 5.114
November 7, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
November 7, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Dr. Adam Aurisano, University of Cincinnati, "New constraints on sterile neutrino oscillations from MINOS, Daya Bay, and Bugey-3," 4:00pm, RLM 9.222
November 8, 2016	THEORY GROUP SEMINAR: Dr. Csaba Csaki, Cornell University, "Twin phenomenology," 2:00pm, RLM 7.104
November 8, 2016	PIZZA SEMINAR: Prof. James R. Chelikowsky, Department of Physics, UT-Austin, "Mechanically Imaging the Chemical Bond!" 5:00pm, RLM 7.104
November 9, 2016	GEOMETRY AND STRING THEORY SEMINAR: Valentin Zakharevich, UT-Austin Math Department, "Gapped Boundary Phases I," 12:00pm, RLM 8.136
November 9, 2016	PHYSICS COLLOQUIUM: Prof. Scott Aaronson, Department of Computer Science, UT-Austin, "Quantum Supremacy," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
November 10, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Simon J. Hands, Swansea University, UK, "Title TBA," 12:30pm, RLM 11.204
November 10, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
November 10, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
November 11, 2016	AMO SEMINAR: Prof. Jonathan Weinstein, Department of Physics, University of Nevada, "Optical pumping of atoms in solid parahydrogen," 4:00pm, RLM 11.204

November 14, 2016	PHYSICS DEPARTMENT OPEN HOUSE: Come interact with physics faculty and students as the Department of Physics opens its doors, 2:00pm-5:00pm, Throughout RLM (look for signs)
November 14, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Jacquelyn Noronha-Hostler, University of Houston; "Finding Missing Resonances using Lattice QCD," 4:00pm, RLM 5.114 (Note room change, this week only.)
November 15, 2016	THEORY GROUP SEMINAR: Dr. Mehrdad Mirbabayi, Stanford University, "Weinberg Soft Theorems from Weinberg Adiabatic Modes," 2:00pm, RLM 7.104
November 15, 2016	PIZZA SEMINAR: Prof. Harry Swinney, Department of Physics, UT-Austin, "Chaos and dynamics of pattern formation: progress and open challenges!" 5:00pm, RLM 7.104
November 16, 2016	GEOMETRY AND STRING THEORY SEMINAR: Valentin Zakharevich, UT-Austin Mathematics, "Gapped boundary conditions for topological insulators," 12:00pm, RLM 8.136
November 16, 2016	THE F.A. MATSEN ENDOWNED REGENTS LECTURESHIP ON THE THEORIES OF MATTER: Dr. David Wineland, NIST, Boulder, "Quantum information processing with trapped atomic ions" 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
November 17, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Marco Buongiorno Nardelli, University of North Texas, "High-throughput materials discovery and development: breakthroughs and challenges in the mapping of the materials genome," 12:30pm, RLM 11.204
November 17, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
November 17, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
November 18, 2016	PHYSICS EDUCATION FORUM: Roundtable Discussion, "Reflections on Education," 3:00pm, RLM 5.114
November 21, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
November 28, 2016	NONLINEAR DYNAMICS SEMINAR: David Sanz, Institute for Fusion Studies, UT-Austin, "Explosive attractor solutions in plasmas and fluids," 1:00pm, RLM 11.204
November 28, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
November 28, 2016	CENTER FOR PARTICLES AND FIELDS SEMINAR: Dr. Matthew Toups, Fermilab, "First-Year Results from MicroBooNE: What Have We Learned?" 4:00pm, RLM 9.222
November 29, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Jess Riedel, UC Santa Barbara, "Objective classical branch structure in a many-body wavefunction from spatial redundancy," 12:30pm, RLM 11.204
November 29, 2016	THEORY GROUP SEMINAR: Dr. Scott Aaronson, UT-Austin Computer Science, "AdS/CFT and Computational Complexity," 2:00pm, RLM 7.104
November 29, 2016	PIZZA SEMINAR: Prof. Karol Lang, Department of Physics, UT-Austin, "Neutrinos: Everything you want to know about neutrinos or could have asked if you knew what to ask!" 5:00pm, RLM 7.104

November 30, 2016	GEOMETRY AND STRING THEORY SEMINAR: Dr. Jacques Distler, UT-Austin, "Seiberg, Senthil, Wang, Witten," 12:00pm, RLM 8.136
December 1, 2016	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Ian Randal Fisher, Stanford University, "Electronic nematic order in strongly correlated materials," 12:30pm, RLM 11.204
December 1, 2016	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
December 1, 2016	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
December 1, 2016	PLASMA VIP SEMINAR: Dr. Bogdan Teaca, Coventry University, "Turbulence in strongly magnetized plasmas: what can we say about its fundamental properties and what are their impact?" 4:00pm, RLM 11.204
December 2, 2016	AMO SEMINAR: Dr. Rafal Zgadzaj, "Optical Imaging of Plasma-Wakefield Accelerator Driven by the 20GeV Electron Beams at FACET/SLAC," 4:00pm, RLM 11.204
December 5, 2016	NONLINEAR DYNAMICS SEMINAR: Claus Wilke, Department of Integrative Biology and ICMB, UT-Austin, "Title TBA," 1:00pm, RLM 11.204
December 5, 2016	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
December 6, 2016	THEORY GROUP SEMINAR: Dr. Joaquim Gomis, University of Barcelona, "Canonical realization of BMS symmetry," 2:00pm, RLM 7.104
December 8, 2016	THEORY GROUP BROWN BAG SEMINAR: Yonatan Khan, Princeton University, "A Broadband/Resonant Approach to Axion Dark Matter Detection," 12:30pm, RLM 9.222
January 17, 2017	THEORY GROUP SEMINAR: Dr. Joel Meyers, CITA, University of Toronto, "Light Relics and Next Generation CMB Observations," 2:00pm, RLM 15.216B (Please note new room this semester.)
January 18, 2017	GEOMETRY AND STRING THEORY SEMINAR: Organizational Meeting, 12:00pm, RLM 8.136
January 19, 2017	THEORY GROUP BROWN BAG MEETING: Prof. Sonia Paban, UT-Austin, "Title TBA," 12:30pm, RLM 9.222
January 19, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
January 19, 2017	VIP SEMINAR: Johnny Zhang, Center for Magnetic Fusion Theory, Chinese Academy of Sciences, Hefei, China, "A noval concept of zonal flow in tokamak theory and spectrum analysis," 4:00pm, RLM 11.204
January 23, 2017	JOINT NONLINEAR DYNAMICS SEMINAR/PHYSICS EDUCATION FORUM: Prof. Randy Tagg, University of Colorado Denver, "Nonlinear PIE: Physics, Innovation and Entrepreneurship - Exploring Connections with Nonlinear Dynamics," 1:00pm, RLM 11.204
January 23, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
January 24, 2017	THEORY GROUP SEMINAR: Simon Knapen, Lawrence Berkeley Laboratory, "Fishing for new physics at the LHC," 2:00pm, RLM 15.216B (Please note new room this semester.)
January 25, 2017	GEOMETRY AND STRING THEORY SEMINAR: Jacques Distler, UT-Austin, "Quantum Mechanics while standing on one leg," 12:00pm, RLM 8.136

January 25, 2017	PHYSICS COLLOQUIUM: Prof. Michael Marder, UT-Austin, "How Texas Canceled Physics Twice and How it then Came Back," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
January 26, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Franz J. Giessibl, University of Regensburg, Germany, "Elastic, inelastic and spin-dependent atom-atom interactions studied by combined STM and AFM," 12:30pm, RLM 11.204
January 26, 2017	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
January 26, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
January 26, 2017	VIP SEMINAR: Michael Brookman, UT-Austin, and Matthew Thomas, University of York, "Turbulent Edge Fluctuation Scattering of RF Power in Experiment and Simulation," 4:00pm, RLM 11.204
January 27, 2017	CENTER FOR COMPUTATIONAL MATERIALS SEMINAR: Franz J. Giessibl, University of Regensburg, Germany, "Atomic force microscopy, a tool to see, move and identify single atoms," 2:00pm, POB 6.304
January 30, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
January 30, 2017	CENTER FOR PARTICLES AND FIELDS SEMINAR: Dr. Junting Huang, Perfect Price, Inc., "Big Data and Dynamic Pricing," 4:00pm, RLM 9.222
January 31, 2017	BIOPHYSICS SEMINAR: José Onuchic, Wiess Chair of Physics, Rice University, "A Transferable Model for Chromatin Folding," 1:30pm, NHB 1.720
January 31, 2017	THEORY GROUP SEMINAR: Netta Engelhardt, Princeton University, "Into the Bulk: A Covariant Approach," 2:00pm, RLM 15.216B (Please note new room this semester.)
February 1, 2017	GEOMETRY AND STRING THEORY SEMINAR: Steven Weinberg, UT-Austin, "The trouble with quantum mechanics," 12:00pm, RLM 8.136
February 1, 2017	LHC RESULTS FORUM: Rodrigo Alonso de Pablo, CERN, "Update on B -> D tau nu decays," 3:00pm, RLM 9.222 (Webinar)
February 1, 2017	PHYSICS COLLOQUIUM: Prof. Ken Heller, University of Minnesota, Twin Cities, "The Role of Problem Solving in Introductory Physics – Forging the Missing Links," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
February 2, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Greg Fiete, UT-Austin, "Band touching points in Floquet systems," 12:30pm, RLM 11.204
February 2, 2017	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
February 2, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
February 3, 2017	TECHNICAL SEMINAR: Dr. John Robinson, KLA-Tencor, "Semiconductor Process Control: Moore's Law and More-than-Moore!" 2:00pm, RLM 5.114
February 6, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222

February 6, 2017	CENTER FOR PARTICLES AND FIELDS SEMINAR: Prof. Louis Strigari, Texas A&M University, "Detecting neutrino-nucleus coherent scattering (and maybe dark matter)," 4:00pm, RLM 9.222
February 7, 2017	THEORY GROUP SEMINAR: Jason Pollack, Caltech, "How Decoherence Affects the Probability of Slow-Roll Eternal Inflation, 2:00pm, RLM 15.216B
February 7, 2017	PIZZA SEMINAR: Prof. Keji Lai, UT-Austin, "Nanoscale Imaging with Microwaves!" 5:00pm, RLM 6.104 (NOTE ROOM CHANGE THIS SEMESTER)
February 8, 2017	GEOMETRY AND STRING THEORY SEMINAR: Ravi Mohan, UT-Austin, "Bell's Inequality," 12:00pm, RLM 8.136
February 8, 2017	NONLINEAR DYNAMICS SEMINAR: Andy Fraser, Los Alamos National Labratory, "The F_UNCLE Project: Functional UNcertainty Constrained by Law and Experiment," 1:00pm, RLM 11.204
February 8, 2017	TECHNICAL SEMINAR: Dr. Richard Fink, Applied Nanotech Inc., "Real Applications of Nanotechnology," 2:00pm, RLM 5.114
February 8, 2017	PHYSICS COLLOQUIUM: Prof. Rupak Mahapatra, Texas A&M University, "Searches for Dark Matter," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
February 9, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Dan Freed, UT-Austin, "Phases of matter and topology," 12:30pm, RLM 11.204
February 9, 2017	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
February 9, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
February 10, 2017	TECHNICAL SEMINAR: Kirk Dorius, J.D., Michael Best & Friedrich LLP, "Patents and Patent Careers for Scientists and Engineers," 2:00pm, RLM 5.114
February 13, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
February 13, 2017	CENTER FOR PARTICLES AND FIELDS SEMINAR: Yangyang Cheng, Cornell, "Moving Physics Forward - CMS Pixel Detector Upgrade for HL-HLC," 4:00pm, RLM 9.222
February 14, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222 (Note seminar is set for Tuesdays instead of Thursdays.)
February 15, 2017	GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136
February 15, 2017	PHYSICS COLLOQUIUM: None scheduled. If that changes, notice will be posted via email and on the online calendar.
February 16, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Brad Siwick, McGill University, Montreal, "Structure and Dynamics with Ultrafast Electron Microscopes or how to make atomic-level movies of molecules and materials," 12:30pm, RLM 11.204
February 16, 2017	THEORY GROUP BROWN BAG MEETING: Members of the Theory Group discuss their work, 12:30pm, RLM 9.222
February 17, 2017	PHYSICS EDUCATION FORUM: Prof. Erin Scanlon, Department of Physics, Texas Lutheran University, "A Graduate Student's Thoughts On

	Conferences," 3:00pm, RLM 6.112
February 17, 2017	AMOP SEMINAR: Prof. Jonathan Weinstein, Department of Physics, University of Nevada, "Optical pumping of atoms in solid parahydrogen," 4:00pm, RLM 11.204
February 20, 2017	NONLINEAR DYNAMICS SEMINAR: Prof. Nanshu Lu, UT Aerospace Engineering and Engineering Mechanics, "Mechanics at bio-electronic interfaces," 1:00pm, RLM 11.204
February 20, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
February 21, 2017	THEORY GROUP SEMINAR: Flip Tanedo, UC Riverside, "Dark Earthshine," 2:00pm, RLM 15.216B
February 21, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
February 22, 2017	GEOMETRY AND STRING THEORY SEMINAR: Matt Headrick, Brandeis University, "Introduction to entanglement entropy in field theory and holography," 12:00pm, RLM 8.136
February 22, 2017	LHC RESULTS FORUM: Paolo Panci, CERN, "An Update on Results from the AMS-02 Experiment," 3:00pm, RLM 9.222 (Webinar)
February 22, 2017	PHYSICS COLLOQUIUM: Prof. John Martinis, Google and UC Santa Barbara, "Quantum supremacy: checking a quantum computer with a classical supercomputer," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
February 23, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Peter Sutter, University of Nebraska-Lincoln, "2D Materials: From Macroscopic Perfection to Emerging Nanoscale Functionality," 12:30pm, RLM 11.204
February 23, 2017	THEORY GROUP BROWN BAG MEETING: Richard Matzner, UT-Austin, "From Einstein's Prediction to LIGO's Triumph," 2:00pm, RLM 9.222 (Please note special time this week only. Q&A session will follow the talk.)
February 24, 2017	TECHNICAL SEMINAR: Dr. David Medellin, Department of Petroleum Engineering, UT-Austin, "Spinning atoms to find oil: Nuclear Magnetic Resonance in the Oil & Gas Industry," 2:00pm, RLM 5.114
February 24, 2017	PHYSICS EDUCATION FORUM: Dr. Sepehr Vakil, Department of Curriculum and Instruction, UT-Austin, "Equity, diversity, and inclusion in STEM," 3:00pm, RLM 6.112
February 27, 2017	NONLINEAR DYNAMICS SEMINAR: Dr. Behzad Eftekhari, Center for Nonlinear Dynamics, UT-Austin, "Model for Gas Production by Fracking," 1:00pm, RLM 11.204
February 27, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
February 28, 2017	THEORY GROUP SEMINAR: Dr. Brian Swingle, Harvard/MIT/Brandeis, "Measuring Quantum Information Scrambling," 2:00pm, RLM 15.216B
February 28, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
March 1, 2017	GEOMETRY AND STRING THEORY SEMINAR: GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136

March 1, 2017	WORKSHOP FOR STUDENTS AND POSTDOCS: Prof. Itai Cohen, Physics Department, Cornell University, "Getting your work noticed" (Bring a written elevator pitch explaining: What you did, How it is different, and Why it is important), 1:00pm, RLM 11.204
March 1, 2017	PHYSICS COLLOQUIUM: Prof. Itai Cohen, Physics Department, Cornell University, "Flight of the Fruit Fly," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
March 2, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Nathan Gabor, UC Riverside, "Three-Body Electronic Interactions in Two-Dimensional Materials," 12:30pm, RLM 11.204
March 2, 2017	THEORY GROUP BROWN BAG MEETING: 12:30pm, RLM 9.222
March 2, 2017	PLASMA SEMINAR: Dr. Vasil Bratanov, Institute for Fusion Studies, UT-Austin, "Nonuniversal energy distribution in turbulence," 4:00pm, RLM 11.204
March 3, 2017	TECHNICAL SEMINAR: Dr. Abe Pena, Nabors Industries, Ltd., "A Career in Physics: Software Engineering," 2:00pm, RLM 5.114
March 3, 2017	PHYSICS EDUCATION FORUM: Dr. Frank Male, Bureau of Economic Geology, "Teaching Never Ends," 3:00pm, RLM 6.112
March 6, 2017	NONLINEAR DYNAMICS SEMINAR: Speaker and Title to be determined, 1:00pm, RLM 11.204
March 6, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
March 7, 2017	THEORY GROUP SEMINAR: Zackaria Chacko, University of Maryland, "Cosmological Signals of a Hidden Dark Matter Sector," 2:00pm, RLM 15.216B
March 7, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
March 8, 2017	GEOMETRY AND STRING THEORY SEMINAR: Ethan Leeman, Math Department, UT-Austin, "Entropy (Part 1)," 12:00pm, RLM 8.136
March 8, 2017	PHYSICS COLLOQUIUM: Dr. Carl Haber, Lawrence Berkeley National Laboratory, "The Restoration of Early Sound Recordings using Optical Metrology and Image Analysis," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
March 9, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Giorgio Sangio Sangiovani, University Wuerzburg, Germany, "Edge states reconstruction from strong correlations in quantum spin Hall insulators," 12:30pm, RLM 11.204
March 9, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
March 9, 2017	PLASMA SEMINAR: Dr. Ge Wang, Institute for Fusion Studies, UT-Austin, "Simulation and Theory of a Frequency Avalanche," 4:00pm, RLM 11.204
March 10, 2017	TECHNICAL SEMINAR: Dr. Kevin Henderson, Los Alamos National Laboratory, "Atoms, Space, Materials, and Decisions," 2:00pm, RLM 5.114
March 20, 2017	NONLINEAR DYNAMICS SEMINAR: Prof. Vernita Gordon, UT-Austin, "Bacterial Mechanobiology: a new field with implications for new directions in medicine," 1:00pm, RLM 11.204
March 20, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to

	particle physics phenomenologists, 3:00pm, RLM 9.222
March 21, 2017	THEORY GROUP SEMINAR: Anna Ijjas, Princeton University, "(Not so) No-Goes in Bouncing Cosmologies," 2:00pm, RLM 15.216B
March 21, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
March 21, 2017	PLASMA VIP SEMINAR: Dr. Hideaki Miura, National Institute for Fusion Studies, "Two-fluid Large eddy simulations of ballooning mode in a Heliotron device," 4:00pm, RLM 11.204
March 22, 2017	GEOMETRY AND STRING THEORY SEMINAR: Val Zakharevich, Mathematics Department, UT-Austin, "Entropy II," 12:00pm, RLM 8.136
March 23, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Jason Petta, Department of Physics, Princeton University, "Strongly Driven Semiconductor Double Quantum Dots," 12:30pm, RLM 11.204
March 23, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
March 24, 2017	TECHNICAL SEMINAR: Dr. Thomas Mazur, Washington University Medical School, "'Physics' in Radiation Oncology," 2:00pm, RLM 5.114
March 24, 2017	AMOP SEMINAR: Dr. Stanimir Kondov, Columbia University, "Quantum Gas Microscopy of the Fermi-Hubbard Model," 4:00pm, RLM 11.204
March 27, 2017	NONLINEAR DYNAMICS SEMINAR: Prof. Alexandr Jonas, Department of Physics, Istanbul Technical University, "Droplet-based optofluidic cavities," 1:00pm, RLM 11.204
March 27, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
March 27, 2017	SPECIAL COLLOQUIUM: Prof. Michael Biercuk, University of Sydney, "Quantum firmware: the importance of physical-layer control in quantum information processing," 4:00pm, RLM 11.204
March 28, 2017	THEORY GROUP SEMINAR: Dr. Jesse Thaler, MIT, "Casimir meets Poisson," 2:00pm, RLM 15.216B
March 28, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
March 28, 2017	PIZZA SEMINAR: Pontus Laurell, UT-Austin, "Topology, magnetism and superconductivity in pyrochlore iridates!" 5:00pm, RLM 6.104
March 29, 2017	GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136
March 29, 2017	PHYSICS COLLOQUIUM: Prof. Jesse Thaler, MIT, "New Physics Gets a Boost: Jet Substructure at the Large Hadron Collider," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
March 30, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Linda Reichl, Physics Department, UT-Austin, "Arnold Diffusion in a Driven Optical Lattice," 12:30pm, RLM 11.204
March 30, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
March 31, 2017	PHYSICS EDUCATION FORUM: Dr. Caitlin Hamrock, E3 Alliance, "Title TBA," 3:00pm, RLM 6.112

April 3, 2017	NONLINEAR DYNAMICS SEMINAR: Dr. Ahmed Helal, UT-Austin, "The mystery dynamics of rare gas clusters in an Extreme Ultraviolet (XUV) laser field," 1:00pm, RLM 11.204
April 3, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
April 4, 2017	THEORY GROUP SEMINAR: Dr. James Gray, Virginia Tech, "Multiply fibered Calabi-Yau manifolds and duality," 2:00pm, RLM 15.216B
April 4, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
April 4, 2017	PLASMA SEMINAR: Dr. Sergei Sharapov, CCFE, UK, "Experimental Studies on the Impact of ECRH/ECCD on Alfvén Eigenmodes," 4:00pm, RLM 11.204
April 4, 2017	PIZZA SEMINAR: Sara Cheng, UT-Austin, "Biophysics: Studying the Dynamics of Life!" 5:00pm, RLM 6.104
April 5, 2017	GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136
April 5, 2017	LHC RESULTS FORUM: Dr. Regina Caputo, University of Maryland /NASA, "Observation of a gamma ray excess in M31 and M33 by the FERMI experiment," 3:00pm, RLM 9.222 (Webinar)
April 5, 2017	PHYSICS COLLOQUIUM: Prof. David Nygren, University of Texas at Arlington, "The Matter – Anti-matter Asymmetry of the Universe: Why is there something, rather than nothing?" 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
April 6, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Justin Wilson, Caltech, "Remnant Geometric Hall Response in a Quantum Quench," 12:30pm, RLM 11.204
April 6, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
April 7, 2017	PHYSICS EDUCATION FORUM: Ben David, "Epistemological Tension in Project Based Learning," 3:00pm, RLM 6.112
April 10, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
April 11, 2017	THEORY GROUP SEMINAR: Dr. S. Josephine Suh, UBC-Vancouver, "Effective action for reparametrizations in the SYK model and an equivalent gravity theory," 2:00pm, RLM 15.216B
April 11, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
April 12, 2017	PHYSICS EDUCATION FORUM LUNCHEON: Dr. Leonard Buckley, Institute for Defense Analyses, "Science and National Security," 11:30am, RLM 5.218 (Kodosky Reading Room)
April 12, 2017	GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136
April 12, 2017	PHYSICS COLLOQUIUM: Prof. Andrew Potter, UT-Austin, "Quantum coherence in 'hot' matter," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
April 13, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Edvardas Narevicius, Weizmann Institute of Science, Israel, "Cold Chemistry with Cold Molecules," 12:30pm, RLM 11.204

April 13, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
April 13, 2017	PLASMA SEMINAR: Dr. Luis Chacon, Los Alamos National Laboratory, "Implicit, conservative PIC algorithms for multiscale collision less plasma simulation," 4:00pm, RLM 11.204
April 17, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
April 18, 2017	THEORY GROUP SEMINAR: Dr. Xingang, Chen, Harvard University, "Classical and Quantum Primordial Standard Clocks," 2:00pm, RLM 15.216B
April 18, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
April 18, 2017	PLASMA SEMINAR: Dr. Gabriele Merlo, UCLA, "Looking at TCV L-mode plasmas through the lens of global gyrokinetic GENE simulations," 4:00pm, RLM 11.204
April 18, 2017	PIZZA SEMINAR: Prof. Mike Marder, UT-Austin, "Physics, Fracking and the Future!" 5:00pm, RLM 6.104
April 19, 2017	GEOMETRY AND STRING THEORY SEMINAR: Dan Freed, Mathematics Department, UT-Austin, "Discrete symmetries and anomalies (con't)," 12:00pm, RLM 8.136
April 19, 2017	LHC RESULTS FORUM: Dr. Manoj Kaplinghat, UC-Irvine, "Recent Developments Concerning Galaxy Velocity Curves," 3:00pm, RLM 9.222 (Webinar)
April 20, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Lucia Steinke, TAMU, "Magnetotransport of Surface States in HfNiSn Single Crystals," 12:30pm, RLM 11.204
April 20, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
April 21, 2017	PHYSICS EDUCATION FORUM: Sarah Stephens, "Longitudinal Visualizations of Student Testing Data," 3:00pm, RLM 6.112
April 21, 2017	AMOP SEMINAR: Prof. Vanderlei S. Bagnato, Instituto de Fisica de Sao Carlos, Brazil, "Quantum Turbulence in a Bose-Condensate," 4:00pm, RLM 11.204
April 24, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
April 24, 2017	CPF SEMINAR: Prof. Stan Majewski, University of Michigan, "State of the Art and the Next Generation Dedicated Brain PET for the Era of Precision Medicine," 4:00pm, RLM 9.222
April 25, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
April 25, 2017	PIZZA SEMINAR: Dr. Will Flanagan, UT-Austin, "Probing Neutrino Oscillations with the MINOS Experiment!" 5:00pm, RLM 6.104
April 26, 2017	GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136
April 26, 2017	GSC WORKSHOP: Women in Physics Group, "Identifying and Interrupting Everyday Intersectional Sexism," 12:00pm, RLM 9.222
April 26, 2017	LHC RESULTS FORUM: Dr. Mauricio Bustamante, Ohio State University,

	"Overview of recent Ice-Cube results," 3:00pm, RLM 9.222 (Webinar)
April 26, 2017	PHYSICS COLLLOQUIUM: Prof. Steve Abrams, Dell Medical School, UT-Austin, "Using Stable Isotopes to Solve Global Malnutrition," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102)..
April 27, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Prof. Keji Lai, UT-Austin, "Visualization of Dynamic Response of Ferroelectric Domains and Domain Walls," 12:30pm, RLM 11.204
April 27, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
April 28, 2017	PHYSICS EDUCATION FORUM: Dr. Amit Bhasin, UT-Austin, "Teaching without a 'How to' manual," 3:00pm, RLM 6.112
May 1, 2017	NONLINEAR DYNAMICS SEMINAR: Prof. Martin Poenie, Molecular Cell & Developmental Biology, UT-Austin, "Title TBA," 1:00pm, RLM 11.204
May 1, 2017	THEORY GROUP PHENOMENOLOGY MEETING: Topics of interest to particle physics phenomenologists, 3:00pm, RLM 9.222
May 1, 2017	CPF SEMINAR: Prof. Nader Mirabolfathi, Texas A&M University, "Toward Single-Electron Resolution Phonon-Mediated Ionization Detectors for Dark Matter and Neutrino Experiments," 4:00pm, RLM 9.222
May 2, 2017	THEORY GROUP SEMINAR: Dr. Seyda Ipek, Fermilab, "Neutrino Masses: First Signal From SUSY!" 2:00pm, RLM 15.216B
May 2, 2017	RELATIVITY SEMINAR: Group Members meet to discuss their work, 3:30pm, RLM 9.222
May 3, 2017	GEOMETRY AND STRING THEORY SEMINAR: Topics of interest to Physicists and Mathematicians, 12:00pm, RLM 8.136
May 3, 2017	PHYSICS COLLOQUIUM: Dr. Tammy Ma, X-Ray Analysis Group Lead for Inertial Confinement Fusion, National Ignition Facility (NIF) – High Energy Density (HED) Science & Techology, Lawrence Livermore National Laboratory, "Creating a Star on Earth: Status of Ignition Experiments at the NIF," 4:00pm, The John A. Wheeler Lecture Hall (RLM 4.102).
May 4, 2017	COMPLEX QUANTUM SYSTEMS/CONDENSED MATTER SEMINAR: Claudio Chamon, Boston University, "Braiding Light," 12:30pm, RLM 11.204
May 4, 2017	THEORY GROUP BROWN BAG: Members of the Theory Group discuss their research, 12:30pm, RLM 9.222
May 11, 2017	PLASMA SEMINAR: David Sondak, ICES, "A New Class of Turbulence Models for Incompressible Magnetohydrodynamics," 4:00pm, RLM 11.204
July 17, 2017	NONLINEAR DYNAMICS SEMINAR: Prof. Avraham Be'er, Institute for Desert Research, Ben-Gurion University of the Negev, Israel, "Levy walk and intricate flow in swarming bacteria," 1:00pm, RLM 11.204
August 3, 2017	CQS SEMINAR: Aaron Barr and Ariel Barr, UT-Austin, "Signatures of Chaos in the Brillouin Zone," 3:00pm, RLM 11.204

Physics Department Staff – Full List

Name	Job Title	Spvsr	Sub Unit
Boretz, Yingyue	Postdoctoral Fellow	Linda E Reichl	Ctr Cplx Quantum Sys
Chen, Hua	Postdoctoral Fellow	Allan H Macdonald	Ctr Cplx Quantum Sys
Cheng, Fei	Postdoctoral Fellow	Chih-Kang Shih	Ctr Cplx Quantum Sys
Du, Liang	Postdoctoral Fellow	Gregory A Fiete	Ctr Cplx Quantum Sys
Dumitrescu, Philipp	Postdoctoral Fellow	Allan H Macdonald	Ctr Cplx Quantum Sys
Efimkin, Dmitry K	Research Fellow	Allan H Macdonald	Ctr Cplx Quantum Sys
Li, Xiao	Postdoctoral Fellow	Qian Niu	Ctr Cplx Quantum Sys
Lovorn, Timothy F	Postdoctoral Fellow	Allan H Macdonald	Ctr Cplx Quantum Sys
Ma, Xin	Postdoctoral Fellow	Xiaoqin Li	Ctr Cplx Quantum Sys
Nam, Hyoungdo	Postdoctoral Fellow	Chih-Kang Shih	Ctr Cplx Quantum Sys
Parker, Jane Ann	Snr Admin Associate	Linda E Reichl	Ctr Cplx Quantum Sys
Ramezani Masir, M.	Postdoctoral Fellow	Allan H Macdonald	Ctr Cplx Quantum Sys
Tsai, Yutsung	Postdoctoral Fellow	Chih-Kang Shih	Ctr Cplx Quantum Sys
Wang, Chun-Yuan	Scientist Assistant	Chih-Kang Shih	Ctr Cplx Quantum Sys
Xiao, Cong	Postdoctoral Fellow	Qian Niu	Ctr Cplx Quantum Sys
Zhang, Hui	Scientist Assistant	Chih-Kang Shih	Ctr Cplx Quantum Sys
Zhang, Qiang	Scientist Assistant	Chih-Kang Shih	Ctr Cplx Quantum Sys
Zhu, Siyuan	Postdoctoral Fellow	Chih-Kang Shih	Ctr Cplx Quantum Sys
Aguirre, Maria E	Snr Admin Associate	Todd Ditmire	Ctr High Enrg Den Sci
Arefiev, Alexey	Research Scientist	Todd Ditmire	Ctr High Enrg Den Sci
Donovan, Michael E	Associate Director	Todd Ditmire	Ctr High Enrg Den Sci
Dyer, Gilliss	Research Associate	Todd Ditmire	Ctr High Enrg Den Sci
Fang, Li	Research Associate	Todd Ditmire	Ctr High Enrg Den Sci
Gaul, Erhard	Research Scientist	Michael E Donovan	Ctr High Enrg Den Sci
Gordon, Joseph M	Tech Staff Associate	Michael E Donovan	Ctr High Enrg Den Sci
Jansen, Oliver	Postdoctoral Fellow	Alexey Arefiev	Ctr High Enrg Den Sci
Labun, Lance A	Postdoctoral Fellow	Bjorn Hegelich	Ctr High Enrg Den Sci
Martinez, Mikael D	Scientist Associate V	Michael E Donovan	Ctr High Enrg Den Sci
Quevedo, Hernan J	Research Associate	Todd Ditmire	Ctr High Enrg Den Sci
Ringuette, Martin	Tech Staff Assistant V	Michael E Donovan	Ctr High Enrg Den Sci
Spinks, Michael M	Scientist Associate I	Michael E Donovan	Ctr High Enrg Den Sci
Wootton, Alan J	Associate Director	Todd Ditmire	Ctr High Enrg Den Sci
Ha, Lichung	Postdoctoral Fellow	Mark G Raizen	Ctr Nonlinear Dynam
Helal, Ahmed M	Postdoctoral Fellow	Mark G Raizen	Ctr Nonlinear Dynam
Nagornykh, Pavel	Postdoctoral Fellow	Mark G Raizen	Ctr Nonlinear Dynam
Plummer, Nathan J	Systems Admin I	Harry L Swinney	Ctr Nonlinear Dynam
Vera, Olga V	Executive Assistant	Harry L Swinney	Ctr Nonlinear Dynam
George, Jimin	Postdoctoral Fellow	Jack L Ritchie	Ctr Particles and Fields

Proga, Marek	Scientist Associate I	Karol Lang	Ctr Particles and Fields
Schreckenberger, A.	Postdoctoral Fellow	Jack L Ritchie	Ctr Particles and Fields
Baez, Edwin	Tech Staff Assistant V	Allan L Schroeder	Department of Physics
Boney, Jeff	Sci Istr Maker II	Allan L Schroeder	Department of Physics
Boyd, Daniel A	Sci Instr Maker Spvsr	Allan L Schroeder	Department of Physics
Campbell, Dale R	Admin Associate	Christopher J Lynch	Department of Physics
Clifford, Jack G	Sci Istr Maker II	Allan L Schroeder	Department of Physics
Costello, Benjamin	Project Specialist	Jack L Ritchie	Department of Physics
Ervin, Matthew F	Grad Prog Admin	Christopher J Lynch	Department of Physics
Fisher, Flint	Sci Istr Maker II	Allan L Schroeder	Department of Physics
Flanagan, Will	Postdoctoral Fellow	Karol Lang	Department of Physics
Goodwin, Richard G	Sci Istr Maker II	Allan L Schroeder	Department of Physics
Hasdorff, Robert C	Tech Staff Assistant V	Allan L Schroeder	Department of Physics
Holt, Mary A	Financial Analyst	Christopher J Lynch	Department of Physics
Lei, Chao	Postdoctoral Fellow	Allan H Macdonald	Department of Physics
Luan, Lan	Research Scientist	Keji Lai	Department of Physics
Lynch, Christopher J	Assistant Director	Jack L Ritchie	Department of Physics
McCoy, Kelly A	Snr Admin Associate	Christopher J Lynch	Department of Physics
McDonald, Bryan K	Sci Istr Maker II	Allan L Schroeder	Department of Physics
Monette, Carol D	Snr Admin Associate	Christopher J Lynch	Department of Physics
Narayan, Rohin T	Postdoctoral Fellow	Peter Onyisi	Department of Physics
Nikiforou, Nikiforos	Postdoctoral Fellow	Timothy R Andeen Jr	Department of Physics
Patkowski, Eric H	Admin Associate	Christopher J Lynch	Department of Physics
Posadas, Agham	Research Associate	Alexander A Demkov	Department of Physics
Quinlan, David	Sci Instr Maker II	Allan L Schroeder	Department of Physics
Ray, Robert L	Research Scientist	Christina Markert	Department of Physics
Ritchie, Jack L	Department Chair	Linda A Hicke	Department of Physics
Sandefur, George L	Sci Istr Maker II	Allan L Schroeder	Department of Physics
Schambach, Jo	Research Scientist	Christina Markert	Department of Physics
Schneider, Kenneth	Welder II	Allan L Schroeder	Department of Physics
Schroeder, Allan L	Elec/Mech Tech Spvsr	Jack L Ritchie	Department of Physics
Suchan, Glenn P	Snr Proc Officer	Mary A Holt	Department of Physics
Thomas, Deepa	Postdoctoral Fellow	Christina Markert	Department of Physics
Villarreal, Carlos	Software Developer	Roy F Schwitters	Department of Physics
Wu, Di	Postdoctoral Fellow	Keji Lai	Department of Physics
Yue, Andrew R	Scientist Associate I	Jack L Ritchie	Department of Physics
Henry, Lakesha	Grants Specialist	Daniel Bost, CNS	Dept of Physics/CHEDS
Austin, Max E Jr	Research Scientist	William L Rowan	Inst for Fusion Studies
Bernstein, Aaron C	Research Scientist	Michael W Downer	Inst for Fusion Studies
Breizman, Boris	Research Professor	Francois Waelbroeck	Inst for Fusion Studies
Carter, Keith R	Tech Staff Associate	William L Rowan	Inst for Fusion Studies

Fitzpatrick, Richard	Associate Director	Francois Waelbroeck	Inst for Fusion Studies
Garza, Teresa A	Snr Admin Associate	William L Rowan	Inst for Fusion Studies
Hatch, David R	Research Scientist	Francois Waelbroeck	Inst for Fusion Studies
Horton, Claude W Jr	Snr Research Scientist	Francois Waelbroeck	Inst for Fusion Studies
Houshmandyar, S.	Research Associate	William L Rowan	Inst for Fusion Studies
Huang, He	Scientist Associate III	William L Rowan	Inst for Fusion Studies
Khudik, Vladimir	Research Scientist	Vacant	Inst for Fusion Studies
Kotschenreuther, M.	Snr Research Scientist	Francois Waelbroeck	Inst for Fusion Studies
Leonard, Lee O Jr	Software Developer	Francois Waelbroeck	Inst for Fusion Studies
Liao, Kenneth T	Postdoctoral Fellow	William L Rowan	Inst for Fusion Studies
Mahajan, Swadesh	Research Professor	Francois Waelbroeck	Inst for Fusion Studies
Maravillo, Anna	Snr Admin Associate	Francois Waelbroeck	Inst for Fusion Studies
Phillips, Perry E	A&P Hourly Empl	William L Rowan	Inst for Fusion Studies
Rowan, William L	Snr Research Scientist	Francois Waelbroeck	Inst for Fusion Studies
Shafiei, Farbod	Research Associate	Michael W Downer	Inst for Fusion Studies
Trendafilov, Simeon	Research Associate	Vacant	Inst for Fusion Studies
Waelbroeck, Francois	Director	Jack L Ritchie	Inst for Fusion Studies
Wang, Ge	Postdoctoral Fellow	Herbert L Berk	Inst for Fusion Studies
Zgadzaj, Rafal	Research Associate	Michael W Downer	Inst for Fusion Studies
Zhao, Hailin	Postdoctoral Fellow	Max E Austin Jr	Inst for Fusion Studies
Zheng, Linjin	Research Associate	Francois Waelbroeck	Inst for Fusion Studies
Duffy, Janice B	Executive Assistant	Steven Weinberg	Weinberg Theory Grp
Jia, Bei	Postdoctoral Fellow	Steven Weinberg	Weinberg Theory Grp