

## Paul M. Haney

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### Education

Ph.D. Physics, University of Texas at Austin, 2007 (Expected).

B.S. Physics, Mathematics, The Ohio State University, 2000, *Magna Cum Laude*.

### Research Experience

- June 2003- present University of Texas at Austin  
Topic: Spintronics in ferromagnets and anti-ferromagnets. Spin transfer effects in micromagnetics, and spin transfer from an ab-initio transport perspective.  
Advisor: Allan MacDonald
- November 2004- January 2005 University of McGill  
Topic: Implementation of spin dependent density functional theory; Non-Equilibrium Green's Functions.  
Advisor: Hong Guo
- May 2003- July 2003 University of Alicante  
Topic: Dynamics of magnetization with a quantum transport model of spin transfer.  
Advisor: Joaquin Fernandez-Rossier

### Employment

- June 2005- September 2005 Seagate Technology Engineer (internship)  
Performed and developed micromagnetic computer simulations of advanced read-head designs.
- May 2001- June 2002 Johns Hopkins Medical Center Biomedical Engineer  
Developed and studied neural models of individual neuron cells and networks of neuron cells, and modelled the effect of drugs on such cells.
- June 2000- February 2001 Applied Performance Technology Software consultant  
Developed and maintained tax software for H&R Block.

### Teaching Experience

- August 2004- December 2004 Teaching Assistant, Introductory Physical Sciences: Mechanics and Heat. The University of Texas Department of Physics.
- August 2002- June 2003 Teaching Assistant, Physics Laboratory for Engineering Majors. The University of Texas Department of Physics.
- August 1997- June 1999 Teaching Assistant, Precalculus. The Ohio State University Department of Mathematics.

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### Current Research Interests

- Condensed Matter Theory.
- Spintronics - spin transfer and magnetoresistance.
- Transport in molecular systems.
- Correlated electron systems.

### Publications

P.M. Haney, D. Waldron, R.A. Duine, A.S. Núñez, H. Guo, and A.H MacDonald, *Ab-initio GMR and current-induced torques in Au/Cr multilayers*, cond-mat/0611599.

P.M. Haney, D. Waldron, R.A. Duine, A.S. Núñez, H. Guo, and A.H MacDonald, *Current induced order parameter dynamics: Microscopic theory applied to Co/Cu/Co spin valves*, cond-mat/0611534.

R.A. Duine, P.M. Haney, A.S. Núñez, and A.H. MacDonald *Inelastic scattering in ferromagnetic and antiferromagnetic metal spintronics*, cond-mat/0610417.

Z. Wei, A. Sharma, A.S. Núñez, P.M. Haney, R.A. Duine, J. Bass, A.H. MacDonald, and M. Tsoi, *Spin transfer in an antiferromagnet*, cond-mat/0606462.

A.S. Núñez, R.A. Duine, P.M. Haney, and A.H. MacDonald, *Theory of spin torques and giant magnetoresistance in antiferromagnetic metals*, Phys. Rev. B **73**, 214426 (2006).

D. Waldron, P. Haney, B. Larade, A. MacDonald, and H. Guo, *Nonlinear spin current and Magnetoresistance of Molecular Tunnel Junctions*, Phys. Rev. Lett **96**, 166804 (2006).

A. Gottschalk and P. Haney *Computations aspects of Anesthetic action in simple neural models*, Anesthesiology **98**(2), 548 (2003).

P. Haney, J.R. Hiller, O. Lunin, S. Pinsky, U. Trittmann *Mass spectrum of supersymmetric Yang-Mills theory in three dimensions*, Phys. Rev. D **62**, 075002 (2000).

### Presentations

*Towards ab-initio calculations for anti-ferromagnetic metal spintronic devices.* APS March Meeting, Baltimore, MD. March 13, 2006.

### Skills

Computer Skills: Extensive experience with C, Matlab, Mathematica, Fortran. Substantial experience with Java, Python, and parallel programming (MPI). Experience in use of Windows and Linux operating systems.

Experience in density functional theory software Siesta and VASP.

### References

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