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Capture of a continuous beam of Li atoms in a cryogenic, supersonic helium jet. MICHAEL BORYSOW, The University of Texas, BRADY STOLL[1], DANIEL HEINZEN, The University of Texas — We are developing an intense cold atom source based on continuous post-nozzle injection of lithium atoms into a supersonic helium jet. The jet operates at a temperature of 5 Kelvin and with a continuous flux of approximately10^{20} helium atoms per second, corresponding to a helium phase space density of order 10^{-3}. By adiabatic expansion, the temperature in the moving frame will be reduced into the mK regime. Lithium atoms injected into the beam will become entrained in the helium flow, and subsequently extracted from it with a magnetic lens. Numerical simulations show that high efficiency of capture and extraction may simultaneously be realized. We anticipate that the extracted lithium beam will have a brightness that is substantially larger than what can be achieved with laser-cooling. We have completed studies of the capture of Li atoms by the helium jet with laser-induced fluorescence. The fluorescence images show clear evidence of entrainment of the Li atoms.

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[X] Prefer Oral Session
[ ] Prefer Poster Session

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