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A High Intensity Cold Atom Source WILLIAM DEBENHAM, JEREMY GLICK, BRENT KRUZEL, CHRISTIAN BRANDT, DANIEL HEINZEN, The University of Texas at Austin — Continuous, high intensity cold atomic beams are excellent sources for precision measurement experiments and atom optics applications. Laser cooling and buffer gas-based methods are already well developed, but new methods that could potentially provide higher brightness beams are still of interest. We present our work on a new approach based on continuous post-nozzle injection of lithium atoms into a supersonic helium jet. We reduce the jet velocity to 200 m/s by cryogenically cooling the helium nozzle and extract the lithium atoms with magnetic focusing. The focused beam has a peak intensity of $7*10^{10}$ $cm^{-2}\,s^{-1}$ and a temperature of 20 mK in the moving frame. Ongoing efforts to increase the beam brightness will be discussed as well as work towards the development and construction of a magnetic storage ring for the cold atoms.

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