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Progress Towards a Magneto-Optical Trap of Titanium[1] SCOTT EUSTICE, KAYLEIGH CASSELLA, DIEGO PEA, MIGUEL AGUIRRE, DAN STAMPER-KURN, University of California, Berkeley — We report on experimental progress towards a magneto-optical trap of bosonic ^{48}Ti. Unlike previously laser-cooled atoms, Ti's ground state ([Ar]$4s^2 3d^2$ a^3F_2) supports strong anisotropic atom-light interactions with off-resonant light. The a^3F_2 state's magnetic moment is on par with an alkali atom ($\sim 4/3\mu_B$), suppressing long-range dipolar interactions between Ti atoms and extending spin-mixture lifetimes compared to more magnetic atoms. The a^3F_2 state does not have a closed transition amenable to laser cooling. However, the metastable state ([Ar]$4s3d^3$ a^5F_5) does posses such a transition at 498 nm with a linewidth of 10.5 MHz ($T_D = 250\mu K$). We report on the production of a beam of atomic Ti from an effusive oven, as well as the optical pumping of the atomic beam into the metastable a^5F_5 state. Progress towards magneto-optical trapping of Ti is presented, as well as future plans to achieve a quantum degenerate gas of Ti atoms.

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