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Towards high phase space density of alkali atoms by simple optical cooling JIAZHONG HU, ZACHARY VENDEIRO, WENLAN CHEN, VLADAN VULETIC, Massachusetts Inst of Tech-MIT — We demonstrate a simple optical cooling method, which can cool down the temperature of rubidium 87 to the ground state of the vibrational levels. We only use one far-detuned laser performing both cooling and optical repumping. By tuning the laser frequency, we verify the dependence of the two-body collision loss versus the laser detuning. Combining with the retrap of the atoms in the optical dipole trap, we can make the phase space density approaching to unity.

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