

Buffer gas-assisted polarization spectroscopy of 6Li

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(Submitted on 11 Apr 2012)

We report on the demonstration of Doppler-free polarization spectroscopy of the D2 line of 6Li atoms. Counterintuitively, the presence of an Ar buffer gas, in a certain pressure range, causes a drastic enhancement of the polarization rotation signal. The observed dependence of the signal amplitude on the Ar buffer pressure and the pump laser power is reproduced by calculations based on simple rate equations. We performed stable laser frequency locking using a dispersion signal obtained by polarization spectroscopy for laser cooling of 6Li atoms.

Subjects: **Atomic Physics (physics.atom-ph)**Cite as: **arXiv:1204.2363 [physics.atom-ph]**(or **arXiv:1204.2363v1 [physics.atom-ph]** for this version)

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