

Abstract Submitted
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Theoretical and experimental studies of absolute absorption of a lithium vapor cell.¹ LEONARDO DE MELO, Indiana UniversityPurdue University Indianapolis, JIAMING LI, LE LUO, Sun Yat-Sen University — We report measurements of absolute absorption of a thermal lithium atomic vapor with argon buffer gas. A non-trivial beam profile dependent saturation absorption has been observed and compared with an atomic model that self-consistently couples optical pumping of hyperfine states, spatial evolution of laser beam intensity and gas dynamics including velocity changing collisions with buffer gas. The quantitative agreement between measurements and simulations confirms that the interplay between atomic state dynamics, optical beam evolution, and velocity changing collisions account for the absorption spectra and the beam profile effects in an ensemble of thermal atomic vapor and buffer gas.

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Leonardo de Melo
IUPUI

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