

Abstract Submitted
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Hyperfine Interactions and Electric Dipole of Cs 11s by Using Electromagnetically Induced Transparency¹ CHIN-CHUN TSAI, ZONG-SYUN HE, JYH-HUNG TSAI, MING-TSUNG LEE, YUNG-YUNG CHANG, Department of Physics, National Cheng-Kung University, Tainan, Taiwan, THOU-JEN WHANG, Department of Chemistry, National Cheng-Kung University, Tainan, Taiwan — Using electromagnetically induced transparency, the hyperfine structure of the 11s state of cesium was measured and analyzed. To improve the accuracy of frequency measurement, a reference probe beam produced from an acousto-optical modulator overlapped with the original probe beam was served as a frequency marker. The hyperfine magnetic dipole constant A of Cs 11s can be derived from the splitting intervals of the observed spectrum. The result is $A = 38.83 \pm 0.26$ MHz. A numerical simulation based on solving the steady state density matrix solution involving dressed-state atom-photon interaction picture, multi-intermediate levels and optical pumping can quantitatively fit the experimental data.

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