

Abstract Submitted
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Hyperfine splitting of the $6s$ level in Rb and its hyperfine anomaly¹ ADRIAN PEREZ-GALVAN, YANTING ZHAO, LUIS OROZCO, Dept. Physics UMD, College Park MD — We present a hyperfine splitting measurement on the $6s$ level in ^{85}Rb and ^{87}Rb . The source of atoms is a 30 cm long cell with the natural abundance of the two isotopes. The cell operates at room temperature in a controlled magnetic environment. Two step excitation through the $5P_{1/2}$ level with lasers at 795 nm and 1.3 μm allows us to study the hyperfine separation of the $6s$ level. Use of AM sidebands in the 1.3 μm laser produces in-situ calibration of the scan. Detection through changes in the absorption at 795 nm shows resonances with good signal to noise ratio to permit a preliminary measurement of the splittings to better than 0.4 MHz. This resolution allows quantitative extraction of the hyperfine anomaly, a manifestation of the space distribution of the nuclear magnetization, in the first excited state of the s manifold. We compare our results with ab initio calculations to test the quality of their wave-functions at the nucleus.

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