

Abstract Submitted
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A tabulation of the bound-state energies of atomic hydrogen¹ E.A. HESSELS, M. HORBATSCH, York University — We present tables for the bound-state energies for atomic hydrogen which include the hyperfine structure [1], and thus this work extends the work of Rev. Mod. Phys. 84, 1527 (2012). The tabulation includes corrections of the hyperfine structure due to the anomalous moment of the electron, due to the finite mass of the proton, and due to off-diagonal matrix elements of the hyperfine Hamiltonian. Simple formulas valid for all quantum numbers (not found previously in the literature) are presented for the hyperfine corrections. The tabulated energies have uncertainties of less than 1 kHz for all states. This accuracy is possible because of the recent precision measurement [Nature, 466, 213 (2010); Science, 339, 417 (2013)] of the proton radius. The effect of this new radius on the energy levels is also tabulated, and the energies are compared to precision measurements of atomic hydrogen energy intervals. [1] arXiv 1601.01057

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