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Measurement of the Polarizability of Ba^{2+}[1] ERICA L. SNOW, SUNY Fredonia, SHANNON L. WOODS, MARK E. HANNI, STEPHEN R. LUNDEEN, Colorado State University, CHARLES W. FEHRENBACH, Kansas State University
— The dipole polarizability of Ba^{2+} was determined by spectroscopy of high-L Rydberg levels of Ba^{+}, using the Resonant Excitation Stark Ionization Spectroscopy (RESIS) method. Beams of Ba^{2+}, obtained by sputtering solid Ba inside a 14 GHz permanent magnet ECR source at Kansas State University, captured a single electron from a dense Rb 12F Rydberg target, forming highly excited Rydberg levels of Ba^{+}. Rydberg levels of Ba^{+} with n=19 or 20 and L=5,6,7,8, and 9 were excited to a much higher level using a Doppler-tuned CO_2 laser and then detected by Stark ionization. The resolved fine structure of these levels, analyzed with the long-range polarization model, determined the polarizability of the ground state of Ba^{2+}.

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