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Polarizability of Kr^{6+} from High-L Kr^{5+} Fine Structure Measurements[1] S.R. LUNDEEN, Colorado State University, C.W. FEHRENBACH, Kansas State University — The transition between n=55 and n=109 Rydberg levels of Kr^{5+} has been studied at high resolution using the RESIS method. Resolved excitation of L = 6, 7, 8, and 9 levels in n=55 lead to a determination of the fine structure energies of these levels. Interpreted with the long-range polarization model, this leads to a measurement of the dipole polarizability of Zn-like Kr^{6+}, $\alpha_d = 2.53(2)\ a_0^3$. Considerations involved in deducing a value of the quadrupole polarizability from the data and factors contributing to the signal and noise levels in measurements of this type will be discussed.

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