

Abstract Submitted  
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**Fine structure measurements in high-L, n=17 and 20 Rydberg states of magnesium: A determination of the polarizabilities of  $\text{Mg}^{+1}$**   
ERICA L. SNOW, LAURA E. WRIGHT, STEPHEN R. LUNDEEN, Dept. of Physics, Colorado State Univ. — RESIS microwave techniques [1] have been used to directly measure the fine structure intervals between several n=17 and 20 high-L states of magnesium. The precision of these measurements and the access to higher-L Rydberg levels provide more than an order of magnitude improvement on the precision of the ionic polarizabilities as compared with previous experiment. [2] This offers an excellent experimental check on the a-priori atomic structure calculations. [1] R.A. Komara, M.A. Gearba, C.W. Fehrenbach and S.R. Lundeen, J. Phys. B: At. Mol. Opt. Phys. **38** S87 (2005). [2] B. J. Lyons and T. F. Gallagher, Phys. Rev. A **57**, 2426 (1998).

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Stephen R. Lundeen  
Dept. of Physics, Colorado State Univ.

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