Abstract Submitted
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Satellites Bands of Cs and Rb HEATHER CROWELL, JILA and Department of Chemistry, University of Colorado at Boulder, EDWARD L. HAMILTON, Department of Chemistry, Northwestern University, Evanston, IL, CEDOMIL VADLA, Institute of Physics, Zagreb, Croatia, KAY NIEMAX, ISAS and University of Dortmund, Germany, CHRIS H. GREENE, JILA and Department of Physics, University of Colorado at Boulder — In species for which a ground-state atom exhibits an electron-atom scattering resonance, the interaction potentials between ground and excited state Cs and Rb atoms were predicted [1,2] to produce oscillations out to hundreds of a.u. It is proposed here that these oscillatory potential curve extrema are responsible for producing satellite bands observable in experimantal absorption spectra [3]. These bands could be identical with curious satellite structures found in line-braodening absorption spectra of Cs vapor and recently also in Rb. Currently we are investigating the preliminary evidence that these features may derive from long-range oscillations in the Cs-Cs and Rb-Rb Rydberg interaction potentials. If confirmed, this could provide an indirect verification of the previously proposed existence of long-range Rydberg molecule bound states. [1] M. I. Chibisov, A. A. Khuskivadze, and I. I. Fabrikant, J Phys. B35, L193 (2002) [2] E. L. Hamilton, C. H. Greene, and H. R. Sadeghpour, J Phys. B35, (2002) [3] H. Heinke, J. Lawrenz, K. Niemax, and K. H. Weber, Z. Phys. A312, 329 (1983). This work was supported in part by NSF.

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