Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Observations of the high vibrational levels of the $B''B^1\Sigma_u^+$state of H_2 ROBERT EKEY, University of Mount Union, ALEXANDER CHARTRAND, Bryn Mawr College, WENQI DUAN, University of Iowa, ELIZABETH MCCORMACK, Bryn Mawr College — Double-resonance laser spectroscopy via the $EF^1\Sigma_g^+, v' = 6, J' = 0 - 2$state was used to probe the high vibrational levels of the $B''B^1\Sigma_u^+$ state of molecular hydrogen. Resonantly-enhanced multiphoton ionization spectra were recorded by detecting ion production as a function of energy using a time of flight mass spectrometer. New measurements of energies for the v = 51 − 66 levels for the $B''B^1\Sigma_u^+$ state are reported, which, taken with previous results, span the v = 46 − 69 vibrational levels. Results for energy levels are compared to theoretical calculations [L. Wolniewicz, T. Orlikowski, and G. Staszewska, J. Mol. Spec. 238, 118 (2006)]. The average difference between the 84 measured energies and calculated energies is -3.8 cm^{-1} with a standard deviation of 5.3 cm^{-1} . This level of agreement showcases the success of the theoretical calculations in accounting for the strong rovibronic mixing of the$^1\Sigma_u^+$and $^1\Pi_u^+$states.

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Date submitted: 06 Nov 2015 Electronic form version 1.4