

Abstract Submitted  
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**Precision calculation of intense-laser-field multiphoton ionization (MPI) rates of  $\text{H}_2^+$  at critical internuclear distances**<sup>1</sup> SANG-KIL SON, SHIH-I CHU, Department of Chemistry, University of Kansas — We extend the time-independent non-Hermitian Floquet formalism [1] for high precision calculation of the MPI rates of  $\text{H}_2^+$  at internuclear distances ( $R$ ) from 2.0 to 20.0 a.u. in intense laser fields with intensity  $1 \times 10^{14}$  W/cm<sup>2</sup> and wavelength 791 nm. The procedure involves the use of the complex-scaling generalized pseudospectral (CSGPS) method for *non-uniform* spatial discretization of the Hamiltonian expressed in prolate spheroidal coordinates. We found that the MPI rates strongly depend upon  $R$  and are significantly enhanced at several critical distances ( $R \sim 8, 11,$  and  $15$  a.u.) in good agreement with the recent experimental results [2]. [1] S. I. Chu and D. A. Telnov, Phys. Rep. **390**, 1 (2004). [2] D. Pavičić, A. Kiess, T. W. Hänsch, and H. Figger, Phys. Rev. Lett. **94**, 163002 (2005).

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