

Abstract Submitted  
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**H<sub>2</sub> dissociation due to collision with He<sup>1</sup>** ROBERT C. FORREY, Department of Physics, Pennsylvania State University at Berks, N. BALAKRISHNAN, Department of Chemistry, University of Nevada-Las Vegas, TECK-GHEE LEE, Department of Physics and Astronomy, University of Kentucky, and Physics Division, Oak Ridge National Laboratory, PHILLIP STANCIL, Department of Physics and Astronomy, and Center for Simulational Physics, University of Georgia — Cross sections for dissociation of H<sub>2</sub> due to collision with He are calculated for excited rovibrational states using the quantum mechanical coupled states approximation. An  $L^2$  Sturmian basis set with multiple length scales is used to provide a discrete representation of the H<sub>2</sub> continuum which includes orbiting resonances and a non-resonant background. Cross sections are given over a range of translational energies for resonant and non-resonant dissociation together with the most important bound state transitions for four different initial states. The results demonstrate that it is possible to compute converged quantum mechanical cross sections using basis sets of modest size.

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Robert C. Forrey  
Pennsylvania State University at Berks

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