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Numerical explorations of above threshold Coulomb explosion for H₂⁺ in an intense laser pulse¹ JIANJUN HUA, BRETT ESRY, J.R. Macdonald Laboratory, Department of Physics, Kansas State University — Above threshold Coulomb explosion is a mechanism recently invoked by Estry et al. [1] to explain previously unobserved structure in the kinetic energy release (KER) spectrum of intense laser induced ionization of H₂⁺. Based on a diabatic Floquet-Born-Oppenheimer picture, above threshold Coulomb explosion predicts multiple sequences of peaks separated by a photon's energy. This model was able to fit the experimental KER data in [1] quite well and allowed predictions about the angular distribution that were also verified in [1]. Nevertheless, fundamental questions about the model remain that we will try to address by solving the time-dependent Schroedinger equation. For simplicity, we solve a one-dimensional model for H₂⁺ that should retain the physics of above threshold Coulomb explosion. We will discuss the results of this numerical test.
[1] B.D.Esry, A.M.Sayler.,P.Q.Wang,K.D.Carnes,and I.Ben-Itzhak, Phys. Rev. Lett. 97,013003(2006)

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Prefer Oral Session

Prefer Poster Session

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