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Time-dependent dynamics of intense laser-induced above threshold Coulomb explosion[1] B.D. ESRY, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Kansas State University, Manhattan, KS 66506 — We use our recently proposed model [1] to extract information about the nuclear dynamics from the recent Coulomb explosion data of Staudte *et al.* taken with 40 fs pulses [2]. That data, taken at multiple intensities near the ionization appearance intensity for both H_2 and D_2 in linearly and circularly polarized light, shows remarkable structure and regularity not easily explained by conventional models. Because our model does fit the spectra well, we can infer the qualitative time-dependent evolution of the system. In addition, we speculate about the possibility of rescattering leading to above threshold Coulomb explosion.

[1] B.D. Esry, A.M. Sayler, P.Q. Wang, K.D. Carnes, and I. Ben-Itzhak, Phys. Rev. Lett. **97**, 013003 (2006).
[2] A. Staudte, D. Pavicić, S. Chelkowski, D. Zeidler, M. Meckel, H. Niikura, M. Schöffler, S. Schössler, B. Ulrich, P. P. Rajeev, Th. Weber, T. Jahnke, D.M. Villeneuve, A.D. Bandrauk, C.L. Cocke, P.B. Corkum, and R. Dörner, Phys. Rev. Lett. (accepted).

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