

Abstract Submitted
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Formation of excited neutral D* fragments from D₂ by a strong laser field¹ BEN BERRY, M. ZOHRABI, BETHANY JOCHIM, T. SEVERT, U. ABLIKIM, D. HAYES, JYOTI RAJPUT, KANAKA RAJU P., PEYMAN FEIZOLLAH, K.D. CARNES, B.D. ESRY, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Physics Department, Kansas State University, Manhattan, KS 66506, USA — Excited neutral D* fragments from D₂ are produced by intense, ultra-short laser pulses (5 – 85 fs). The kinetic energy release (KER) upon fragmentation is found to be very sensitive to laser parameters such as chirp, peak intensity, and pulse duration. Furthermore, using field ionization of highly excited D* fragments, we are able to determine the n population in a range of excited states ($17 \leq n \leq 44$). Due to the long flight time to the detector (tens of μ s), much of the initial excited population decays by spontaneous emission. We simulate this process in order to link the measured population to that created by the laser. On the technical side, we also present a scheme for determining the detection efficiency of an MCP detector for excited neutral atoms.

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