

Abstract Submitted
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Carrier-envelope phase effects in state-selective measurements of D* fragments from D₂ molecules BEN BERRY, M. ZOHRABI, U. ABLIKIM, NORA G. KLING, TRAVIS SEVERT, BETHANY JOCHIM, K. D. CARNES, B. D. ESRY, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Physics Department, Kansas State University — The yield of long-lived D* fragments from D₂ in intense, few-cycle laser pulses exhibits a strong carrier-envelope phase (CEP) dependence. Similar CEP effects are observed in the spatial asymmetry, defined as the normalized yield difference between events in each direction along the laser polarization. By field ionizing highly excited D* fragments we are able to limit the range of excited states measured. This allows for CEP control studies of small subsets of D* states, i.e. Rydberg D(*nl*) with *n* on the order of 25-50. Furthermore, we Fourier transform the CEP-dependent observables to gain insight into the photon pathways involved in the D* formation. This strategy is supported by a theoretical framework that links CEP effects to interferences between pathways involving different numbers of photons [1, 2].

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