

Abstract Submitted
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Channel competition in strong-field dissociation of a CS⁺ target¹

BETHANY JOCHIM, K.J. BETSCH, M. ZOHRABI, U. ABLIKIM, T. SEVERT, BEN BERRY, A.M. SUMMERS, K.D. CARNES, I. BEN-ITZHAK, J. R. Macdonald Laboratory, Department of Physics, Kansas State University, Manhattan, KS 66506 USA — Using a coincidence 3-D momentum imaging technique, we study ultrafast laser-induced dissociation of a CS⁺ ion beam. Over a wide laser intensity range, from 10¹⁰ to 10¹⁶ W/cm², we find clear alternation in the dominance of the C⁺⁺ S and C + S⁺ channels with intensity. Moreover, low-kinetic energy release (KER) (≤ 1 eV) dissociation in both channels at the lower end of the intensity range suggests the intriguing possibility of photodissociating metastable states being involved. Utilizing an estimate of the initial vibrational population, measured KER and angular distribution spectra, and the molecular ion's calculated electronic structure, we examine the dynamics underlying the observed intensity-dependent channel competition.

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Bethany Jochim
J. R. Macdonald Laboratory, Department of Physics,
Kansas State University, Manhattan, KS 66506 USA

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