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O₂⁺ dissociation caused by an ultrashort intense laser pulse¹ A.M. SAYLER, P.Q. WANG, J.F. XIA, M.A. SMITH, R. CABRERA-TRUJILLO, K.D. CARNES, B.D. ESRY, I. BEN-ITZHAK, J.R. Macdonald Laboratory, Department of Physics, Kansas State University — Laser-induced dissociation of O₂⁺ has been experimentally studied with ultrashort (~50 fs) intense (10¹⁴ to 10¹⁵ W/cm²) laser pulses at 790 nm using kinematically complete coincidence 3D momentum imaging. The resulting kinetic energy release (KER) distribution has several distinct peaks, each of which has a unique angular distribution. The lower KER features are peaked around the laser polarization, while at higher KER, dissociation perpendicular to the laser polarization is significant. For comparison, a theoretical study of O₂⁺ dissociation using the Electron-Nuclear Dynamics (END) approach with a laser pulse included in the time-dependent dynamics is underway. Preliminary results also indicate that ionization, which occurs predominantly at the high end of the intensity range, is strongly peaked along the laser polarization.

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Prefer Oral Session

Prefer Poster Session

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