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Two- and three-body fragmentation of CO_2^+ induced by intense ultrashort laser pulses[1] JYOTI RAJPUT, U. ABLIKIM, M. ZOHRABI, BETHANY JOCHIM, BEN BERRY, K. D. CARNES, B. D. ESRY, I. BEN-ITZHAK, J. R. Macdonald Laboratory, Department of Physics, Kansas State University, Manhattan, KS 66506, USA — We have studied the fragmentation dynamics of a CO_2^+ molecular-ion beam in the strong-field regime using $\geq$32 fs laser pulses (about 795 nm and 1x10^{16} W/cm^2). A coincidence three-dimensional momentum imaging method was used to measure all ionic and neutral fragments formed during this multiphoton process. The angular distributions for the dominant two-body fragmentation channels $CO^+ + O$, $CO^{2+} + O$ and $CO^+ + O^+$ show two features, one predominantly aligned with the polarization axis and the other close to isotropic. The angular distributions for the three-body channels $C^+ + O^+ + O$ and $C^+ + O^+ + O^+$, populated via dissociative ionization, show the polarization axis lying preferentially in the molecular plane. We will discuss the kinetic energy release, angular distributions and relative production probability of the observed two- and three-body fragmentation channels.

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