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Dynamic of charge asymmetric dissociation in strong laser fields
WEI LAI, CHUNLEI GUO, University of Rochester — We perform a comparison study on the dynamics of double-ionization induced charge asymmetric dissociation (CAD) in two isoelectronic diatomic molecules, CO and N_2. With ultrahigh temporal resolution time-of-flight measurements, CAD channel C^{2+}+O shows a clear intensity dependence for its kinetic energy release (KER). This is interesting because a neutral atom presents in the dissociation and thus, the channel should not gain a significant amount of Coulomb energy during the molecule dissociation. In comparison, the counterpart CAD channel N^{2+}+N has nearly a constant KER. Our studies show that the C^{2+}+O channel is predominantly produced through a sequential process whereas the N^{2+}+N channel involves a nonsequential transition. Their distinctly different dynamics are attributed to the different electronic configurations of the two isoelectronic molecules.

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