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Strong Field Double Ionization of Conjugated Molecules¹ ARTHUR ZHAO, PETER SANDOR, VINCENT TAGLIAMONTI, THOMAS WEINACHT, Department of Physics and Astronomy, Stony Brook University, Stony Brook NY 11794-3800, SPIRIDOULA MATSIKA, Department of Chemistry, Temple University, Philadelphia PA 19122 — We use ultrafast (sub-10 fs) pulses and coincidence velocity map imaging to study strong field double ionization of molecules. We observe an enhancement of the double ionization yield for conjugated molecular systems. This enhancement persists even with elliptically polarized light, which excludes the possibility of re-scattering. Fragment ions resulting from Coulomb explosion of the dications are observed with high kinetic energy, which suggests the removal of deeply bound electrons. This hypothesis is corroborated by electronic structure calculations.

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