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**Angle-Resolved Strong Field Ionization of Polyatomic Molecules: More than the Orbitals Matters** OUMAROU NJOYA, SUNY Stony Brook, SPIRIDOULA MATSIKA, Temple University, THOMAS WEINACHT, SUNY Stony Brook — We compare the time and angle-dependent strong field ionization yields of three molecules with very similar electronic structure. A pump pulse in the deep ultraviolet excites the molecules to their first bright excited state (HOMO-LUMO excitation). We then measure the strong field ionization yield due to a near infrared probe pulse as a function of delay and angle between pump and probe polarization vectors. *ab initio* electronic structure calculations allow us to associate the parent ion yields with removal of an electron from the LUMO orbital (occupied after excitation by the pump). Despite the fact that the orbitals are very similar, the yields are very different, indicating that it is not the orbital shape alone which determines angle-dependent ionization yields.

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