

Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Suppressed strong field ionization of polyatomic molecules AGNIESZKA JARON-BECKER, ANDREAS BECKER, JILA and Department of Physics, University of Colorado, Boulder, CO, 80309 — Suppressed strong field ionization of diatomic molecules has been attributed to Young type interferences of different contributions originating from atomic centers. The destructive or constructive interference depends on the symmetry properties of the active orbital. For polyatomic molecules the situation is more complex due to the variety of possible symmetries as well as the possibility that more than one orbital can be ionized by a strong laser source. We use S matrix theory for strong field ionization to analyze the suppressed ionization of several polyatomic molecules. We study in detail the influence of different molecular properties on the observed interference, by investigating the difference between coherent and incoherent sums of the atomic contributions. Finally, we discuss the dependence of the phenomenon of suppressed molecular ionization on the parameters of the laser field.

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Date submitted: 25 Jan 2010

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