

Abstract Submitted
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Effect of Nuclear Motion on Molecular High Order Harmonic Generation¹ ANDRE D. BANDRAUK², SCZEPAN CHELKOWSKI, SHINOSUKE KAWAI, HUIZHONG LU, Universite de Sherbrooke — Exact (non-BornOppenheimer) solutions of the Time-dependent Schroedinger Equation for 1-D H₂⁺, D₂⁺, H₂, D₂ are used to investigate the effect of nuclear motion on the electron recombination process in the presence of ultrashort (few cycles) intense laser pulses, which process leads to MHOHG, molecular high order harmonic generation. Time series analysis methods allow for obtaining from the MHOHG spectrum the recombination times of the ionized electron during the nuclear motion. The results show that the emission process of MHOHG is controlled by the motion of the nuclear wave packets on “bond-softened” or Laser Induced Molecular Potentials, LIMPS in both the ionized and ground state. MHOHG is thus limited to a short time and not during the whole pulse duration.

¹Natural Science Engineering Research Council of Canada.

²Canada Research Chair/Computational Chemistry and Molecular Photonics

Andre D. Bandrauk
Universite de Sherbrooke

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