Abstract Submitted
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Enhanced harmonic generation in double-well potentials[1]
GEORGE GIBSON, University of Connecticut — Recently, a new 3-level structure, called the Γ-system, has been identified and studied, and shows strong multiphoton coupling and harmonic generation. Under certain circumstances, the Γ-system appears in 1D double well potentials, suggesting that strong multiphoton excitation and harmonic generation may be seen in diatomic molecules at favorable internuclear separations. This talk presents numerical solutions to the TDSE of two electrons in a double well potential approximating a dication (A_2^{2+}) at various internuclear separations. These calculations are compared to 2- and 3-level approximations of the full energy level structure. I show: 1) the presence of the Γ-system in the 1D double-well potential; 2) that harmonic generation is enhanced at certain R; 3) the enhancement is due to the Γ-system. In addition, I investigate a neutral double well potential (A_2). While the level structure is not as clear as the dication, the enhanced harmonic generation is still present. Therefore, neutral diatomic molecules at intermediate R should be a strong source of harmonic generation when exposed to intense laser fields.

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