

Abstract Submitted
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Alignment dependence in the breakup of the H₂ molecule by xuv laser pulses¹ XIAOXU GUAN, KLAUS BARTSCHAT, Drake University, BARRY I. SCHNEIDER, National Science Foundation — We present predictions of angular distributions for two-photon double ionization of the hydrogen molecule by a short laser pulse with a central photon energy of 30 eV. Using the fixed-nuclei approximation, the laser-driven electronic wave packets are obtained by solving the time-dependent Schrödinger equation in two-center elliptical coordinates with the internuclear distance fixed at 1.4 bohr. In addition to the parallel and perpendicular geometries, we explore the dependence of the angular distribution on the relative orientation of the molecular axis and the linear polarization vector of the laser field. The individual contributions from the $^1\Sigma_g$ and $^1\Delta_g$ channels are found to be very sensitive to both the orientation angle and the direction of the reference electron that is observed at a fixed angle with a preset energy. The resulting interference effect between the different ionization channels is analyzed in detail.

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