Abstract Submitted
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Substantial impact of the orientation of transition dipole moments on the dynamics of diatomics in laser fields[1] ANDRAS CSEHI, PETER BADANKO, GABOR HALASZ, University of Debrecen, LORENZ CEDERBAUM, University of Heidelberg, AGNES VIBOK, University of Debrecen — The formation of light-induced conical intersections (LICIs) between electronic states of diatomic molecules has been thoroughly investigated over the past decade. In the case of running laser waves, the rotational, vibrational, and electronic motions couple via the LICI giving rise to strong nonadiabatic phenomena. In contrast to natural conical intersections (CIs) which are given by nature and hard to manipulate, the characteristics of LICIs are easily modified by the parameters of the laser field. The internuclear position of the created LICI is determined by the laser energy, while the angular position is given by the orientation of the transition dipole moment (TDM) with respect to the molecular axis. In the present work, using MgH+ as a showcase example, we exploit the strong impact of the orientation of the TDMs exerted on the light-induced nonadiabatic dynamics. Comparing the photodissociations induced by parallel or perpendicular transitions, a clear signature of the created LICIs is revealed in the angular distribution of the photofragments.

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