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Controlling H_2^+ dissociation pathways in an intense laser pulse with the carrier-envelope phase[1] VLADIMIR ROUDNEV, J.R. Macdonald laboratory, Department of Physics, Kansas State University, B.D. ESRY — The dissociation of H_2^+ and HD^+ in an intense ($>5\times10^{14}$W/cm^2) laser field has been found to be sensitive to the carrier-envelope phase difference (CEPD) for short ($\sim$10 fs) pulses when initially in their ground vibrational state. In this case, the ratio of p+H to H+p can vary by as much as a factor of three. Experimentally, though, these molecules are typically in a distribution of vibrational states. We will show that the CEPD dependence of dissociation varies with the initial vibrational state, thus reducing the contrast between the two channels after averaging over this distribution. The velocity distribution of the fragments, however, could help to reveal CEPD effects in molecular dissociation.

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