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Orientation-dependent strong field ionization of diatomic molecules[1] XI CHU, ITAMP, SHIH-I CHU, University of Kansas — We present an all-electron 3D first principle study of strong field ionization of diatomic molecules in intense laser fields using time-dependent density functional theory [1]. Dependence of the ionization probability on the angle between the molecular axis and the field polarization is analyzed for both the highest and the inner-valence electrons. Our results are consistent with the experimental data [2] of the total ionization rate as a function of this angle. We demonstrate that the molecular orientation-dependent inner-valence-electron ionization is appreciable at strong laser intensities, and it is determined by both the molecular orbital type and the dynamic electron- electron interaction. [1] X. Chu and S. I. Chu, Phys. Rev. A **70**, 061402(R) (2004). [2] Litvinyuk IV, Lee KF, Dooley PW, *et. al.*, Phys. Rev. Lett. **90** 233003 (2003).

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