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Measurement of ionization of an H_2^+ beam by ultra-short intense laser pulses¹ I. BEN-ITZHAK, P.Q. WANG, A.M. SAYLER, K.D. CARNES, V. ROUDNEV, B.D. ESRY, J.R. Macdonald
Laboratory, Department of Physics, Kansas State University — The ionization of H_2^+ by 45 fs, 10^{14} - 10^{15} W/cm² laser pulses was measured using coincidence 3D momentum imaging. The measured kinetic energy release distribution is broad and its peak shifts toward higher values as the laser intensity is increased indicating that ionization shifts to smaller internuclear distances. The angular distributions are strongly peaked along the laser polarization, resulting in much narrower distribution than the dissociation into $H^+ + H$. Our results are compared with theoretical calculations in which the molecule is aligned along the laser polarization by taking only those molecules which dissociated in a narrow cone around the polarization. The calculated and measured ionization rates exhibit a fast increase with laser intensity at this intensity range.

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Prefer Oral Session
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