

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Strong-Field Double Ionization of hydrogen: Wavelength Dependent Study IGOR LITVINYUK, DIPANWITA RAY, Kansas State University, DANIEL COMTOIS, INRS, Quebec, ASAD HASAN, American University of Sharjah, UAE, DAVID VILLENEUVE, NRC, Ottawa, Canada, JEAN-CLAUDE KIEFFER, INRS, Quebec, ALI ALNASER, American University of Sharjah, UAE — We studied double-ionization of H₂ and D₂ by intense femtosecond laser pulses of different wavelengths (500, 550, 600, 650, 800, 1300, 2000 nm) and peak intensities, by measuring kinetic energy release of resulting fragments. In addition to fragments from the well known enhanced ionization channel (5-6 eV), higher energy protons/deuterons (8-10 eV) were for the first time observed when using shorter wavelengths (500-650 nm) at high-peak intensities. This channel exhibited wavelength dependence, with KER decreasing for longer wavelengths. The channel was observed with both linear and circular polarization. We attribute this phenomenon to 3-photon excitation of molecular ion sequentially followed by the second ionization.

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Date submitted: 01 Feb 2008

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