Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Ultrafast Proton Transfer Driven by a Femtosecond Strong-Field Laser Pulse ALEXEI MARKEVITCH, Temple University, Department of Chemistry, DMITRI ROMANOV, Temple University,Department of Physics, STANLEY SMITH, Wayne State University, Department of Chemistry, ROBERT LEVIS, Temple University, Department of Chemistry, TEMPLE UNIVERSITY COLLABORATION, WAYNE STATE UNIVERSITY COLLABORATION — Kinetic energy distributions of protons ejected from a polyatomic molecule, anthraquinone, subjected to 60 fs, 800 nm laser pulses of intensity between 0.2 and 4.0x10ˆ14 W/cmˆ2, reveal field-driven restructuring of the molecule (intramolecular proton migration) prior to its Coulomb explosion. Model calculations demonstrate that proton migrates into a field-dressed metastable potential energy minimum. Isomerization mediated by strong field is an important novel phenomenon in coupling of polyatomic molecules with intense laser pulses.

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Date submitted: 30 Nov 2005 Electronic form version 1.4