Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Controlling the dissociation of an HD^+ beam with intense two-color laser field[1] I. BEN-ITZHAK, J. MCKENNA, F. ANIS, D. RAY, B. GAIRE, M. ZOHRABI, D. URSREY, C.L. COCKE, K.D. CARNES, B.D. ESRY, J.R. Macdonald Laboratory, Department of Physics, Kansas State University — Electron localization on a specific nucleus during strong-field dissociation of a molecular-ion is controlled by the relative phase between the 790 and 395 nm components of a linearly-polarized ultrashort laser pulse. We have observed both spatial and channel asymmetries experimentally for an HD^+ target. The spatial asymmetry, which has been observed before, has been understood as being due to the breaking of the spatial symmetry of the driving field. The channel asymmetry, namely the controlled dissociation into either H^++D(1s) or H(1s)+D^+, is independent of the spatial asymmetry and is not as easily understood in the language of driving field asymmetry. We will discuss these first measurements of this effect as well as an attempt to understand both the spatial and channel asymmetries within a single, unified picture.

[1]Supported by the Chemical Sciences, Geosciences, and Biosciences Division, Office of Basic Energy Sciences, Office of Science, U.S. Department of Energy.

I. Ben-Itzhak
J.R. Macdonald Laboratory, Dept of Physics, Kansas State University

Date submitted: 27 Jan 2010 Electronic form version 1.4