Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Rotation of H_2^+ driven by 10fs laser pulse[1] FATIMA ANIS, BRETT ESRY, J. R. Macdonald Laboratory, Department of Physics, Kansas State University — We have performed full-dimensional calculations for H_2^+ in ultrashort intense laser pulse including physical processes of dissociation, electronic excitation as well as nuclear vibration and rotation. The post-pulse time evolution of the bound wave function shows revivals due to impulsive alignment. Revival structure is more pronounced than the revivals observed experimentally for D_2[1], which makes H_2^+ more favorable to observe this process. Moreover, alignment depends strongly on the initial vibrational state, making it possible to control the alignment and use it in a pump-probe scheme to study dissociation and ionization. This work also shows that including rotation is important even for very short pulses.
[1] K. F. Lee, F. Légaré, D. M. Villeneuve and P. B. Corkum, J. Phys. B, 39, 4081(2006)

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

Fatima Anis
J. R. Macdonald Laboratory, Department of Physics, Kansas State University

Date submitted: 05 Feb 2007 Electronic form version 1.4