Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Few electron systems in a strong laser pulse NICHOLAS VENCE,
University of Tennessee, PREDRAG KRSTIC, Oak Ridge National Laboratory,
ROBERT HARRISON, University of Tennessee / Oak Ridge National Laboratory
— We propose a numerical procedure for investigating the dynamics of a one elec-
tron wave function in a strong, sub-femtosecond laser field. The non-perturbative
time evolution method does not rely on an eigenfunction basis set but uses the mul-
tiresolution techniques for spatial discretization as described in [Harrison et. al., J.
Chem. Phys. 121, 2866 (2004)]. The time propagation is done by the chin-chen time
splitting method [Chin Chen, J. Chem. Phys. 114, 7338 (2001)]. The excitation and
ionization cross-sections for the hydrogen atom, the oxygen ion and the hydrogen
molecular ion could serve as a benchmark for future calculations and experiments
due to the well controlled accuracy inherent in this numerical scheme.

Nicholas Vence
University of Tennessee

Date submitted: 29 Nov 2008　　　　　　　　　　Electronic form version 1.4