Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Investigating Enhanced Multiple Ionization Near Conical Intersections in C2H2+[1] GREG MCCRACKEN, Stanford University, PULSE Institute, CHELSEA LIEKHUS-SCHMALTZ, ANDREAS KALDUN, PHIL BUCKSBAUM, Stanford University, PULSE Institute, SLAC National Accelerator Laboratory — Nonadiabatic behavior near conical intersections (CIs) leads to strong nonradiative mixing between different electronic states in polyatomic molecules. Recently, evidence was shown that strong field multiple ionization was significantly enhanced near the CI driving the isomerization of CHD [1]. An interesting question is if it is a general feature that conical intersections enhance ionization rates. In this talk, we investigate the possibility of enhanced multiple ionization near the CI between the $A$and Xstates of the C2H2 cation, which is involved in the isomerization pathway to vinylidene. The cation is prepared in the Astate nonlinearly using 50 fs pulses at 266 nm. The evolution of the nuclear wavepacket through the CI is then probed by a strong ultrafast pulse at 800 nm. Using a newly designed system to reconstruct the momenta of all ion fragments from a single Coulomb explosion event, we are able to see any enhancement of highly charged channels over doubly charged ones from events that are probed near the CI. [1] V.S. Petrovich et. al, J. Chem. Phys. 139, 184309 (2013)

[1]This work was supported by NSF Grant PHY-0649578

Greg McCracken
Stanford University, PULSE Institute

Date submitted: 29 Jan 2016 Electronic form version 1.4