Abstract Submitted
for the DAMOP15 Meeting of
The American Physical Society

Probing and Manipulating Ultrafast Dynamics in Carbon Dioxide Using Multicolor Vacuum Ultraviolet Pulses[1] TRAVIS WRIGHT, Chemical Sciences Division, LBNL, ELIO CHAMPENOIS, Department of Applied Science and Technology, UC Berkeley, JAMES CRYAN, SLAC National Accelerator Laboratory, DIPANWITA RAY, NIRANJAN SHIVARAM, FELIX STURM, DAN SLAUGHTER, ALI BELKACEM, Chemical Sciences Division, LBNL — A time-resolved study of ultrafast dynamics in carbon dioxide is presented. The singlet delta state is excited by a two photon 4.75 eV pump and has intersections with many states which can ultimately lead to neutral dissociation. Probing with 11 eV to the dissociative cationic C state, we measure a lower limit of approximately 200 fs for this neutral dissociation channel. Adding an additional and independently controlled third pulse of infrared photons (1.6 eV) is shown to affect the time dynamics in this manifold of lowest lying neutral states, altering the dissociation in the neutral. Velocity Map Imaging is used to resolve the kinetic energy release, total ion yield, and angular distributions of both the photoions and photoelectrons produced in this three pulse experiment.

[1]This work is supported by Chemical Sciences, Geosciences and Biosciences division of BES/DOE.

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Date submitted: 30 Jan 2015 Electronic form version 1.4