

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Impulsive longitudinal molecular alignment¹ DOUGLAS BROEGE, Stanford University, RYAN COFFEE, SLAC National Accelerator Laboratory, PHILIP BUCKSBAUM, Stanford University, SLAC National Accelerator Laboratory — We report on measurements of a rotational wavepacket in diatomic nitrogen created impulsively with a circularly polarized 800 nm ultrafast pulse. This wavepacket differs from those typically produced in impulsive alignment experiments with linearly polarized light in that it exhibits transient alignment along the direction of laser propagation. In this experiment, The initial anisotropy in the angular distribution is torroidal within the plane of polarization, whereas the time averaged anisotropy lies perpendicular to this plane. This is in stark contrast to the linearly polarized case where both the initial and time averaged anisotropies lie along the electric field vector. In order to probe the wavepacket evolution in a co-propagating geometry, we use an interferometric measurement of the time varying index of refraction.

¹This research is supported by the U.S. Department of Energy Office of Basic Energy Science through the PULSE Institute at SLAC

Douglas Broege
Stanford University

Date submitted: 23 Jan 2009

Electronic form version 1.4