Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Observation of Two-Beam Coupling between Intersecting Filament-Forming Beams in Air AARON BERNSTEIN, MATTHEW MCCORMICK, JAMES SANDERS, TODD DITMIRE, University of Texas at Austin, TEXAS CENTER FOR HIGH INTENSITY LASER SCIENCE TEAM — Controlling laser plasma filaments and their propagation is a major step toward their practical use in a variety of applications. Techniques typically rely on modifying beam launch conditions to optimize filament propagation. We present measurements of two-beam coupling between crossed filament-producing beams in ambient laboratory air, which may lead to scalable techniques for extending filament propagation dynamically. In the experiment, two pulses of less than 10 mJ and 80 fs duration were reflected off a 5 m focal length mirror, and made to cross either before, at, or after the filament location. By imaging the beams after the filaments have diffracted, energy transfers of +/-10% were measured. This energy transfer was controllable by a relative delay of +/-20 fs for the compressed pulse case. In addition to beam images, single-shot measurements were made of laser energy and spectra of one of the beams.

Aaron Bernstein
University of Texas at Austin

Date submitted: 11 Jan 2008 Electronic form version 1.4