

Abstract Submitted  
for the OSF08 Meeting of  
The American Physical Society

**Detection and Characterization of a Laser Induced Plasma**

MICHAEL DEXTER, MATTHEW BOHN, Air Force Institute of Technology —  
A plasma is generated and detected in ambient air using a 50 femtosecond, amplified Ti:sapphire laser at 800 nm and its second-harmonic at 400 nm. The plasma is monitored as a function of laser polarization and amplitude using an ultrasound detector. The second harmonic is generated in a BBO crystal located in a 1:1 telescope. The group delay of the second harmonic through the collimating lens of the telescope will be calculated and the resulting experimental complication requiring the separation of the fundamental and second-harmonic will be discussed. The goal of the experiment is to generate terahertz via the mixing of the second-harmonic and the fundamental in the plasma. The mechanism for terahertz generation in a plasma will be introduced as resulting from either a transient current or via four-wave mixing. The terahertz radiation can be detected using either the electro-optic method or a liquid He cooled silicon bolometer. The prospects of using this terahertz generation method in a two color femtosecond enhancement cavity will be discussed.

Matthew Bohn  
Air Force Institute of Technology

Date submitted: 01 Oct 2008

Electronic form version 1.4