

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

A nonlinear plasma retroreflector for single pulse Compton backscattering J.P. PALASTRO, Icarus Research, D. KAGANOVICH, D. GORDON, B. HAFIZI, J. PENANO, M. HELLE, A. TING, Naval Research Laboratory — A long laser pulse focused onto the edge of a gas jet nozzle launches a shock wave. The shock wave and gas jet flow collide forming a density spike [1]. The leading edge of an incident ultrashort laser pulse ionizes the gas, while the bulk undergoes a nonlinear Poynting flux reversal from the ionized spike. The resulting counterpropagating field can Compton backscatter from electrons accelerated in the ultrashort pulse's wakefield, upshifting the frequency. We examine the reversal mechanism and properties of the counterpropagating field to optimize the Compton scattered radiation.

[1] D. Kaganovich *et al.*, Phys. Plasmas 18, 120701 (2011).

John Palastro
Icarus Research

Date submitted: 10 Jul 2014

Electronic form version 1.4