

Abstract Submitted  
for the DPP17 Meeting of  
The American Physical Society

**Study of photoionization of supersonic gas jets at the pulsed power generator**<sup>1</sup> KYLE SWANSON, VLADIMIR IVANOV, ROBERTO MANCINI, DANIEL MAYES, Physics Department, University of Nevada, Reno — Supersonic, nitrogen, neon and argon, gas jets photoionized by a broadband x-ray flux were studied at the University of Nevada, Reno. The x-ray flux was produced by the collapse of a wire-array z-pinch implosion on the 1MA Zebra pulsed power accelerator, with photons mostly under 1keV and photon-energy integrated energy between 12kJ -16kJ. A Mach-Zehnder interferometer at 266 nm was set up to extract the atom number density profile of the jet before the Zebra shot. Air-wedge interferometers, at 266 and 532 nm, were used to determine the electron number density of the plasma during the Zebra shot. The ratio of electron to atom number densities provide the average ionization state of the plasma. A program has been developed to automate the extraction of phase shift maps from both types of interferometers. Preliminary results from the experiment are promising and show that a photoionized plasma has been created in the gas jet, thus demonstrating a new experimental platform to study photoionized plasmas in the laboratory.

<sup>1</sup>This work was sponsored by DOE Office of Science Grant DE-SC0014451.

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Date submitted: 14 Jul 2017

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