Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Analyzing Proton Radiographs of Turbulent Transport in Magnetized HED Plasmas C. JOHNSON, Rowan University, W. FOX, Princeton Plasma Physics Laboratory and Dept. of Astrophysical Science, Princeton University, D. SCHAEFFER, Dept. of Astrophysical Science, Princeton University, S. MALKO, Princeton Plasma Physics Laboratory and Centro de Laseres Pulsados (CLPU), Spain, C. KIM, University of California Irvine — Many laboratory experiments use magnetic fields to control high energy density (HED) plasmas, including studies of inertial fusion energy, magnetized shocks, and magnetic reconnection. Therefore, it is important to understand the coupling and behavior of magnetic fields and HED plasmas – especially turbulent or anomalous transport of plasma relative to the magnetic field. We present experiments at the OMEGA laser facility to study the interaction of a flowing plasma generated from the ablation of a CH target with an external magnetic field powered by MIFEDS. The plasma-field interaction was diagnosed with 2D proton radiography, which measures magnetic fields through the deflections of the protons. A mesh placed between the proton source and plasma served to break the proton beam into quantifiable beamlets. In this work we establish a system for analysis of this data, including algorithms to detect beamlet locations and automatically calculate their deflections from a reference image, which provides information about the evolution of the magnetic field.

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Date submitted: 09 Jul 2020 Electronic form version 1.4