Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

EPPS measurements of particle acceleration due to magnetically driven reconnection using laser-powered capacitor coils[1] OMAR FRENCH, University of Maryland, Baltimore County, A. CHIEN, L. GAO, H. JI, K. HILL, Princeton Plasma Physics Laboratory, J. FUCHS, A. FAZZINI, Ecole Polytechnique, S. CHEN, P. BLEOTU, ELI-NP, R. TAKIZAWA, Osaka University, A. RASMUS, Los Alamos National Laboratory, S. KLEIN, University of Michigan, X.X. YUAN, Beijing Normal University, H. CHEN, Lawrence Livermore National Laboratory — Magnetic reconnection is a ubiquitous plasma phenomenon characterized by the rapid breaking and reconnecting of magnetic field lines, during which magnetic energy is converted into plasma flow, thermal, and nonthermal energy. Reconnection has been studied in laboratory experiments; however, it is difficult to measure the accelerated particle spectra due to a short particle mean free path relative to detector distance. To bypass this limitation, we have developed a reconnection platform at the Jupiter Laser Facility composed of a pair of U-shaped Cu coils joining two parallel Cu plates irradiated by a 250 J IR nanosecond square pulse from the Titan laser. Using this, we have obtained particle spectrometer data as part of a broader study of the reconnection particle acceleration mechanism(s). To isolate reconnection-accelerated particles, we compare data from a reconnection (2-coil) case to a control (1-coil) case. We also investigate angular dependence by comparing data between five particle spectrometers placed at various angles relative to the driven target.

[1]This work was supported by the DOE SULI program, the HEDLP program, and LaserNetUS initiative at the Jupiter Laser Facility.

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Date submitted: 08 Jul 2020 Electronic form version 1.4