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Magnetic Reconnection of an Externally Applied Magnetic Field in a High-Energy Density Plasma G. FIKSEL, D. BARNAK, P.-Y. CHANG, S.X. HU, P.M. NILSON, R. BETTI, Laboratory for Laser Energetics and Fusion Science Center, U. of Rochester, W. FOX, K. GERMASCHEWSKI, U. of New Hampshire, A. BHATTACHARJEE, PPPL, Princeton — An experiment on magnetic reconnection of an externally applied magnetic field in counter-propagating high-energy density plasmas was conducted on the OMEGA EP Laser System.[1] Two counter-propagating plasma flows were created by irradiating oppositely placed plastic (CH) targets with 1.8-kJ, 2-ns laser beams. An external magnetic field was imposed perpendicular to the plasma flow by MIFEDS (magneto-inertial fusion electrical discharge system).[2] The magnetic field has a null-x-point geometry with $B = 5\,\mathrm{T}$ at the targets. The plasma interaction was imaged by laser-driven, fast-proton radiography. The radiography images demonstrate formation of a pair of counter-propagating magnetized "ribbons" that collide and reconnect at the midplane. The results will be compared with particle-in-cell simulations and interpreted with predictions from the *DRACO* code. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944, and NLUF Grant DE-SC0008655.

[1]L. J. Waxer *et al.*, Opt. Photonics News **16**, 30 (2005).
[2]O. V. Gotchev *et al.*, Rev. Sci. Instrum. **80**, 043504 (2009).

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