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Overview and first results of experiments on magnetic reconnection between colliding magnetized plasmas at the National Ignition Facility W. FOX, PPPL, M. ROSENBERG, LLE, D. SCHAEFFER, Princeton, G. FIKSEL, University of Michigan, H.S. PARK, D. KALANTAR, LLNL, A. BHATTACHARJEE, Y.-M. HUANG, H. JI, J. MATTEUCCI, Princeton, L. GAO, PPPL, D. UZDENSKY, U Colorado, A. BIRKEL, C.K. LI, MIT, S.X. HU, A. SHVYDKY, LLE — Expanding laser-produced plasmas naturally self-generate magnetic fields by the Biermann battery effect, and the collision of two plumes can drive magnetic reconnection. The National Ignition Facility at LLNL occupies a unique position for laser-driven magnetic reconnection experiments by simultaneously allowing very large plasma temperature, low plasma resistivity, and large system size, which allows observation of secondary instabilities driven during magnetic reconnection and particle acceleration relevant to astrophysical plasmas. Magnetic reconnection experiments have been conducted on the NIF through the NIF Discovery Science program with the first experimental shots conducted in May 2017. We will present the design of the experimental platform and results from the first experimental day. Magnetic reconnection data is obtained from proton radiography based on a DHe3 backlighter, x-ray self-emission, and a new low-energy particle spectrometer (NIF EPPS-300G) developed by the NIF Facility and Engineering and fielded for the first time on these experiments.

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