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Relativistic magnetic reconnection driven by intense lasers in preformed plasma[1] PAUL CAMPBELL, A. RAYMOND, A. MCKELVEY, A. MAKSIMCHUK, J. NEES, V. YANOVSKY, K. KRUSHELNICK, Univ of Michigan - Ann Arbor, C. F. DONG, W. FOX, Princeton Plasma Physics Laboratory, C. ZULICK, Naval Research Laboratory, M.S. WEI, General Atomics, H. CHEN, Lawrence Livermore National Laboratory, V. CHVYKOV, ELI-Alps, C. MILEHAM, P.M. NILSON, C. STOECKL, Laboratory for Laser Energetics, A.G.R. THOMAS, L. WILLINGALE, Lancaster University — Experiments were performed with the OMEGA EP laser system focusing the two short pulse beams to high intensities on foil targets. Relativistic electrons drive fast reconnection self-generated magnetic fields. To investigate the effects of a preformed plasma on this relativistic magnetic reconnection, a long pulse UV beam was used to ablate the front surface of layered targets. The density and reconnection dynamics in the preformed copper or CH plasma were diagnosed with a 4ω optical probe. A spherically bent crystal imaged characteristic copper K_α emission induced by fast electrons accelerated into the target in the reconnection diffusion region.

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