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**Direct Measurement of the Acceleration of a Probe Beam by a Dense Plasma Focus Z-Pinch** J.L. ELLSWORTH, S. FALABELLA, B. RUSNAK, A.E.W. SCHMIDT, V. TANG, Lawrence Livermore National Laboratory — Dense plasma focus (DPF) Z-pinch plasmas produce multiple-MeV ions on a cm-scale length, implying electric field gradients exceeding 100 MV/m in the plasma. We report on the first experiments using a 4 MeV deuteron probe beam to directly measure the electric field gradients produced by the kJ-level DPF experiment at LLNL. This information can be used in conjunction with fully kinetic simulations of DPF plasmas to further our understanding of the mechanisms that produce these beams. An understanding of gradient formation in DPFs is necessary to optimize the gradients in these devices for compact accelerator applications. This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 and supported by the Laboratory Directed Research and Development Program (11-ERD-063) at LLNL.

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