

Abstract Submitted
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Spectroscopic Investigation of a Dense Plasma Focus with Local Plasma and Gas Injection¹ S. L. JACKSON, J. T. ENGELBRECHT, E. E. PETKOV, A. BERESNYAK, A. S. RICHARDSON, A. A. MAMONAU, J. L. GIULIANI, J. W. SCHUMER, T. A. MEHLHORN, Plasma Physics Division, Naval Research Laboratory, Y. MARON, E. STAMBULCHIK, Faculty of Physics, Weizmann Institute of Science, D. KLIR, K. REZAC, J. CIKHARDT, Czech Technical University in Prague, Faculty of Electrical Engineering, Department of Physics, CHRISTINE ROARK, PETER H. STOLTZ, ANTON SPIRKIN, Tech-X Corporation, J. W. LUGINSLAND, Confluent Sciences — Charged particle acceleration is being investigated in a dense plasma focus (DPF) driven by the Hawk pulsed-power generator at the Naval Research Laboratory and initialized using local injection of neutral gas and plasma into a vacuum chamber, rather than a conventional neutral gas fill. A neutron yield of $5E10$ at a peak current of 670 kA has been measured using rhodium foil activation counters, significantly above the yield expected based on scaling with current from conventional DPFs. A suite of spectroscopic diagnostics, including a high resolution, fiber-coupled, imaging spectrograph, is used to characterize the plasma, both prior to and during the DPF current pulse.

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