Ihor Holod,Sheng Jiang, Jason Liu, Thanks!

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Construction of a Compact, Low-Inductance, 100 J Dense Plasma Focus for Yield Optimization Studies CHRISTOPHER COOPER, ALEX POVILUS, Lawrence Livermore Natl Lab, STEVEN CHAPMAN, Alameda Applied Science, STEVE FALABELLA, YURI PODPALY, BRIAN SHAW, JASON LIU, ANDREA SCHMIDT, Lawrence Livermore Natl Lab — A new 100 J mini dense plasma focus (DPF) is constructed to optimize neutron yields for a variety of plasma conditions and anode shapes. The device generates neutrons by leveraging instabilities that occur during a z-pinch in a plasma sheath to accelerate a beam of deuterium ions into a background deuterium gas target. The features that distinguish this miniDPF from previous 100 J devices are a compact, engineered electrode geometry and a low-impedance driver. The driving circuit inductance is minimized by mounting the capacitors close to the back of the anode and cathode $<$ 20 cm away, increasing the breakdown current and yields. The anode can rapidly be changed out to test new designs. The neutron yield and 2D images of the visible light emission are compared to simulations with the hybrid kinetic code LSP which can directly simulate the device and anode designs. Initial studies of the sheath physics and neutron yields for a scaling of discharge voltages and neutral fill pressures are presented. Prepared by LLNL under Contract DE-AC52-07NA27344.

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