Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

DPF Experiments at LLNL[1] ALEX POVILUS, ENRIQUE ANAYA, MICHAEL ANDERSON, GUSTAVO BARTOLO, STEVE CHAPMAN, CHRIS COOPER, OWEN DRURY, ALICE DURAND, CLEMENT GOYON, DREW HIGGINSON, IHOR HOLOD, ANTHONY LINK, RAY MATTES, DON MAX, YURI PODPALY, ANDREA SCHMIDT, Lawrence Livermore National Laboratory — A dense plasma focus is a relatively compact coaxial plasma gun which completes its discharge as a Z-pinch. These devices have been designed to operate at a variety of scales in order to produce short (<100 ns) pulses of ions, X-rays, or neutrons. LLNL has recently constructed and brought into operation a new device, the MJOLNIR (MegaJOuLe Neutron Imaging Radiography) DPF which is designed for radiography and high yield operations. This device has been commissioned over the last year and has achieved neutron yields up to 3E11 neutrons/pulse at 2.2 MA pinch current while operating at up to 1 MJ of stored energy. MJOLNIR is equipped with a wide range of diagnostics, including activation foils, neutron time of flight detectors, a fast framing camera, optical light gates, and a time-gated neutron and x-ray imager. LLNL also runs unique particle-in-cell (PIC) simulations of DPF discharges, and has been able to gain significant insight into the various physical factors that influence neutron yield. To that end, MJOLNIR is one of the first DPFs whose design and continual upgrades are heavily influenced by model predictions. We will present device operation, recent results, and first x-ray and neutron images..

[1]Prepared by LLNL under Contract DE-AC52-07NA27344

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Date submitted: 29 Jun 2020 Electronic form version 1.4