Abstract Submitted
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Dense Plasma Focus Simulations at LLNL[1] ANTHONY LINK, A. POVILUS, R. ANAYA, M. G. ANDERSON, J. R. ANGUS, S. CHAPMAN, C. M. COOPER, C. GOYON, D. HIGGINSON, I. HOLOD, Lawrence Livermore Natl Lab, D. MAX, Mission Support and Test Services, M. MCMAHON, Y. A. PODPALY, A. E. SCHMIDT, Lawrence Livermore Natl Lab — Dense plasma focus (DPF) Z-pinches are compact pulse power driven devices consisting of two coaxial electrodes, separated by an insulator and filled with a low-density gas. The discharge of DPF consists of three distinct phases: first generation of a plasma sheath, plasma rail gun phase where the sheath is accelerated down the electrodes and finally an implosion phase where the plasma stagnates into a z-pinch geometry. A DPF is similar in nature to a traditional gas puff z-pinch, with the rail gun phase serving as an opening switch for a fast-current rise into an imploding load. MHD/XMHD, Hybrid Kinetic and Fully Kinetic techniques are employed in simulating dense plasma focus (DPF) loads at LLNL for optimizing neutron generation. Simulations of two of LLNL's DPFs will be presented: a 300 J, 80 kA small scale DPF and the newly commissioned MJOLNIR DPF which operates at 1 MJ and 2.25 MA. Simulations and results from the 2019-20 commissioning campaign of MJOLNIR will be presented.

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