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Varying Radii of On-Axis Anode Hollows For kJ-Class Dense Plasma Focus BRIAN SHAW, STEVEN CHAPMAN, STEVEN FALABELLA, ALEXEI PANKIN, JASON LIU, ANTHONY LINK, ANDRA SCHMIDT, Lawrence Livermore National Lab — A dense plasma focus (DPF) is a compact plasma gun that produces high energy ion beams, up to several MeV, through strong potential gradients. Motivated by particle-in-cell simulations, we have tried a series of hollow anodes on our kJ-class DPF. Each anode has varying hollow sizes, and has been studied to optimize ion beam production in Helium, reduce anode sputter, and increase neutron yields in deuterium. We diagnose the rate at which electrode material is ablated and deposited onto nearby surfaces. This is of interest in the case of solid targets, which perform poorly in the presence of sputter. We have found that the larger the hollow radius produces more energetic ion beams, higher neutron yield, and sputter less than a flat top anode. A complete comparison is presented. This work was prepared by LLNL under Contract DE-AC52-07NA27344 and supported by Office of Defense Nuclear Nonproliferation Research and Development within U.S. Department of Energy's National Nuclear Security Administration

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