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Developing stagnating-corona fusion targets as neutron sources MATTHIAS HOHENBERGER, N. B. MEEZAN, A. J. MACKINNON, W. HSING, O. L. LANDEN, Lawrence Livermore Natl Lab, F. TREFFERT, S. H. GLENZER, SLAC National Accelerator Laboratory, W. M. RIEDEL, M. A. CAPPELLI, Stanford University, N. KABADI, R. PETRASSO, Massachusetts Institute of Technology — We describe the development of an 'inverted-corona' fusion platform for neutron generation. Spherical, low-Z targets with either an inner CD layer, or filled with fusionable gas (D2 or DT) are irradiated on the inside surface via laser beams entering through laser-entrance holes. The resulting ablative flow reaches high velocities, 1000 km/s, before interacting at the target's center. This generates fusion reactions through stagnation and thermalization of the fast ions. This platform has been demonstrated at the kJ-level [1,2], and is expected to scale to intermediate neutron yields in excess of 1e14 at moderate laser energies (hundred-kJ level), while offering advantages over conventional, laser-driven neutron sources. For example, substantial neutron fluences at the target wall make it an interesting platform for basic science applications, while the potential for single-sided drive of the neutron source make it ideal for neutron radiography. We will present results from proofof-principle experiments on OMEGA and design calculations for NIF-scale targets. Prepared by LLNL under Contract DE-AC52-07NA27344. [1] Ren et al., Phys. Rev. Lett. 118, 165001 (2017) [2] Abe et al., Appl. Phys. Lett. 111, 233506 (2017)

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