Abstract Submitted
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Numerical design of a magnetized turbulence experiment at the National Ignition Facility[1] SCOTT FEISTER, Univ. of Chicago (UC), PETROS TZEFERACOS, UC, JENA MEINECKE, Univ. of Oxford (OXF), ARCHIE BOTT, OXF, DAMIANO CAPRIOLI, JT LAUNE, UC, TONY BELL, OXF, ALEXIS CASNER, CEA France, MICHEL KOENIG, Laboratoire dUtilisation des Lasers Intenses (LULI), CHIKANG LI, Massachusetts Institute of Technology (MIT), FRANCESCO MINIATI, ETH Zurich, RICHARD PETRASSO, MIT, BRUCE REMINGTON, Lawrence Livermore National Laboratory (LLNL), BRIAN REVILLE, Queens University Belfast, J. STEVEN ROSS, LLNL, DONGSU RYU, Ulsan National Institute of Science Technology, DMITRI RYUTOV, LLNL, HONG SIO, MIT, DAVID TURNBULL, LLNL, ALEX ZYLSTRA, Los Alamos National Laboratory, ALEXANDER SCHEKOCHIHIN, OXF, DUSTIN FROULA, Laboratory for Laser Energetics, HYE-SOOK PARK, LLNL, DON LAMB, UC, GIANLUCA GREGORI, OXF — The origin and amplification of magnetic fields remains an active astrophysical research topic. We discuss design (using three-dimensional FLASH simulations) of a magnetized turbulence experiment at the National Ignition Facility (NIF). NIF lasers drive together two counter-propagating plasma flows to form a hot, turbulent plasma at the center. In the simulations, plasma temperatures are high enough to reach super-critical values of magnetic Reynolds number (Rm). Biermann battery seed magnetic fields (generated during laser-target interaction) are advected into the turbulent region and amplified by fluctuation dynamo in the above-unity Prandtl number regime. Plasma diagnostics are modeled with FLASH for planning and direct comparison with NIF experimental data.

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