Abstract Submitted
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3D MHD simulations of radial wire arrays[1] C. JENNINGS, D. AMPLEFORD, Sandia National Laboratory, A. CIARDI, Obervatoire de Paris, J. CHITTENDEN, S. BLAND, N. NIASSE, Imperial College — We present 3D resistive MHD simulations evaluating multi-MA radial wire arrays as a potential compact, high intensity source for inertial confinement fusion and laboratory astrophysics. A radial wire array consists of wires running radially outwards from a central electrode, and was first investigated at the 1 MA level on the MAGPIE generator at Imperial College. Originally used as a method of producing magnetic tower laboratory jets relevant to astrophysics[1], they have also shown potential as a high power x-ray source. Able to produce x-ray pulses with a rise time and peak power comparable to cylindrical wire arrays, radial arrays occupy a smaller volume and may consequently be able to access higher power densities. We discuss simulation results reproducing radial array experiments performed on the MAGPIE facility as a means of benchmarking our model. This model is then used to evaluate radial wire arrays in the multi-MA regime for planned experiments on the Saturn generator of Sandia National Laboratories. [1] A. Ciardi et al, Phys. Plasmas 14, 056501 (2007)

[1]Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the US DOE's NNSA under contract DE-AC04-94AL85000.

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