

Abstract Submitted
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Hybrid-PIC Algorithms for Simulation of Merging Plasma Jets in the Plasma Liner Experiment¹ CARSTEN THOMA, DALE WELCH, ROBERT CLARK, Voss Scientific, JOSEPH MACFARLANE, IGOR GOLOVKIN, Prism Computational Sciences, F. DOUGLAS WITHERSPOON, HyperV Technologies — In the upcoming Plasma Liner Experiment (PLX) at Los Alamos National Laboratory a spherical array of 30-60 jets generated by plasma guns will be merged to form imploding plasma liners. We describe the Hybrid particle-in-cell (PIC) methods implemented in the code LSP for plasma jet simulation and present results of simulations of merging Ar jets. Electron macroparticles are treated as fluid elements which carry an intrinsic temperature while ion macroparticles are treated kinetically. The effective charge state is obtained from EOS tables as a function of the local plasma parameters under the assumption of local thermodynamic equilibrium (LTE). The effect of radiation cooling on the electrons is also included self-consistently into the Hybrid PIC formalism. The LSP results of jet merging simulations will be post-processed using the SPECT3D code to generate simulated radiation flux levels, spectra and images (MacFarlane et al., this meeting).

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Carsten Thoma
Voss Scientific

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