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Radiation-MHD Simulations of Plasma-Jet-Driven Magneto-Inertial Fusion Gain Using USim[1] PETER STOLTZ, KRISTIAN BECKWITH, MAHDUSUDHAN KUNDRAPU, Tech-X Corp, SCOTT HSU, SAMUEL LANGENDORF, Los Alamos National Laboratory — One goal of the modeling effort for the PLX-α project is to identify plasma-jet-driven magneto-inertial fusion (PJMIF) [Hsu et al., IEEE Trans. Plasma Sci. **40**, 1287 (2012)] configurations with potential net fusion-energy gain. We use USim, which is a tool for modeling high-energy-density plasmas using multi-fluid models coupled to electromagnetics using fully-implicit iterative solvers, combined with finite volume discretizations on unstructured meshes. We include physical viscosity and advanced-EOS modeling capability, and are investigating the effects of different radiation (including flux-limited diffusion) and alpha-transport models. We compare 2D and 1D gain calculations [Knapp, C. E. and Kirkpatrick, R. C., Physics of Plasmas, **21**, 070701 (2014)] for various liner geometries, parameters, and plasma species, and consider the effects of liner non-uniformities on fusion-gain degradation.

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