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Z-pinch stagnation and radiation production using a MHD turbulence model[1] KYLE PETERSON, Sandia National Laboratories, JAMES HAMMER, Lawrence Livermore National Laboratory — The physics of a Z-pinch stagnation is not clearly understood. Most simulations of z-pinches tend to significantly overpredict radiated power and underpredict the amount of radiated energy. We will present 1D and 2D simulations of tungsten wire array Z- pinches that incorporate a new K-epsilon MHD turbulence model. In this model, plasma stagnation is dominated by turbulent kinetic energy. The turbulent energy relatively slowly cascades into the ions, equilibrates with the electrons and radiates. In contrast to simulations without the turbulence model, simulated radiated energy, pulse width, and pulse power are found to be in reasonable agreement with experiment. Sensitivity to initial conditions will also be discussed.

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Kyle Peterson
Sandia National Laboratories

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