

Abstract Submitted
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Verification of FLASH Implementations of the 3T Approximation for Plasma Hydrodynamics¹ SHRAVAN GOPAL, KLAUS WEIDE, CARLO GRAZIANI, DON LAMB, DOE/ASC/NNSA Flash Center, The University of Chicago — FLASH is a highly capable, fully modular, professionally managed Eulerian code with a wide user base. We are adding capabilities to FLASH to make it an open code for the academic HEDP community. A key need is to provide the ability to model single-fluid plasmas as consisting of three coupled components – electrons, ions, and radiation in the diffusion approximation — that can be described by 3 temperatures (3T). We discuss the challenges of implementing the 3T approximation in an Eulerian code. We report the results of verification tests of the solvers we have implemented in FLASH for electron, ion, and radiation thermal diffusion, including flux limiting. We also report the results of a new hydrodynamics plus thermal conduction verification test, and various 2T and 3T Su-Olson-type verification tests.

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