Abstract Submitted
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Anisotropic thermal conduction in the FLASH code[1] E. C. HANSEN, Flash Center for Computational Science, University of Chicago, K. WEIDE, M. B. ADAMS, N. FLOCKE, B. KHIAR, A. REYES, D. Q. LAMB, P. TZEFERACOS, Flash Center for Computational Science, Department of Astronomy and Astrophysics, University of Chicago — Anisotropic thermal conduction is a diffusive process relevant to applications in plasma physics that use magnetic fields. It is well known that heat is transported more freely parallel to magnetic field lines, and it is constrained perpendicular to field lines. In experiments, such as magneto-inertial fusion experiments, this concept can be utilized to more effectively confine heat. We have implemented anisotropic thermal conduction into the FLASH code, the multi-physics radiation magneto-hydrodynamics code developed and maintained by the Flash Center for Computational Science at the University of Chicago. Our implementation also works with the adaptive mesh refinement in FLASH, which significantly increased the level of complexity of the thermal diffusion code. Here we present our implementation along with verification benchmarks that illustrate the effects of anisotropic thermal conduction.

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