Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Modeling the Thermal Cooling Instability with CRASH RACHEL YOUNG, MATTHEW TRANTHAM, CAROLYN KURANZ, Univ of Michigan - Ann Arbor — We will present the results of one and two-dimensional simulations of the thermal cooling instability using CRASH, the University of Michigans radiation hydrodynamics code. The thermal cooling instability has long been a subject of interest in astrophysics, where it is credited with altering a wide variety of phenomena, ranging from accretion shocks on white dwarf stars (length scale 10^8 cm) to colliding stellar wind bubbles (length scale 10^{20} cm). Astrophysicists have done a great deal of work understanding their own parameter space and how incoming velocity and density affect the instability. Our work extends their approach to the high-energy-density parameter space. As time allows, we will discuss the implications for building high-energy-density experiments. This work is funded by the U.S. Department of Energy NNSA Center of Excellence under cooperative agreement number DE-NA0003869 and the National Science Foundation through the Basic Plasma Science and Engineering program NSF 16-564, grant number 1707260.

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Date submitted: 26 Jun 2020 Electronic form version 1.4