Abstract Submitted
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Design of a spherically symmetric standing accretion shock experiment in high-energy density plasmas[1] TOMASZ PLEWA, TIMOTHY HANDY[2], Florida State University, BRUCE REMINGTON, Lawrence Livermore National Laboratory, CAROLYN KURANZ, PAUL DRAKE, University of Michigan — Standing accretion shocks (SAS) arise when the expansion of a shock front stalls and can no longer sustain its development. The aim of our study is to identify feasible conditions and parameters for an experimental system that is able to capture the essential physics processes required for SAS development. Analytic methods and high-resolution hydrodynamic simulations in multidimensions are used to investigate the design. Our framework reproduces the results of Blondin & Mezzacappa obtained in the supernova SAS context, and has characterized system values that are required to produce realistic laboratory scenarios. Our results highlight key differences between the experimental setup and astrophysical environment, and provide design parameters for future experiments aimed at probing core-collapse supernova explosions.

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