Abstract Submitted
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Sedov-Taylor-like blast waves as an in-situ measure of energy transport in laboratory experiments[1] S. M. FINNEGAN, R. R. PETERSON, T. J. URBATSCH, Los Alamos National Laboratory, N. B. MEEZAN, Lawrence Livermore National Laboratory, J. R. FEIN, D. J. AMPLEFORD, Sandia National Laboratories, Albuquerque — A principle mechanism for the formation and evolution of cosmic structures is the interaction of radiation and matter. Radiation propagating through the interstellar medium interacts with pre-existing obstructions, affecting the organization of interstellar shocks, leading to complex structures. Validating radiation transport models in the presence of obstructions is thus important to underwriting our understanding of such interactions. Here, we present the design of new experiments on the Z Pulsed Power Facility at Sandia National Laboratories in which the evolution and structure of Sedov-Taylor-like blast waves[1] are used as an in-situ measure[2] of the net radiative energy flow in the presence of obstructions. Through the use of opposing experiments, one serving as a fiducial for the net energy delivered, the relative energy flow in the presence of objects or through complex surfaces in the opposing experiment can be inferred. [1] G. I. Taylor, Proc. R. Soc. London, Ser. A 201, 159 (1949); L. I. Sedov, Prikl. Mat. Mekh. 10, 241, No. 2 (1946) [2] R. R. Peterson et al., Phys. Plasmas 13, 056901 (2006); Thomas E. Tierney et al., Rev. Sci. Instrum. 79, 10E919 (2008)

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