

Abstract Submitted  
for the DPP16 Meeting of  
The American Physical Society

**Study of laser preheat in magnetic liner inertial fusion using the AMR code FLASH<sup>1</sup>** MARISSA ADAMS, University of Rochester, CHRISTOPHER JENNINGS, STEPHEN SLUTZ, KYLE PETERSON, Sandia National Laboratories, PIERRE-ALEXANDRE GOURDAIN, University of Rochester, UNIVERSITY OF ROCHESTER SANDIA NATIONAL LABORATORIES COLLABORATION — Magnetic Liner Inertial Fusion (MagLIF) on the Z Pulsed Power Accelerator involves three processes: magnetization, preheat, and compression [S.A. Slutz et al., *Phys. Plasmas* **17**, 056303 (2010)]. An issue with this scheme is the development of instabilities during laser preheat, where the Z-Beamlet laser system may not deposit energy into deuterium fuel uniformly. This study explores potential mixing between liner and fuel, and inner imprinting of seeds on a beryllium liner that may generate late instability growth and shear, using the Eulerian AMR code FLASH. We further investigate potential instability implications of an additional layer of deuterium-tritium ice, as has been proposed [S.A. Slutz and R.A. Vesey, *PRL* **108** 025003 (2012)] and assess the sensitivity of MagLIF implosions to axial variations in fuel preheat; meanwhile testing the expediency of FLASH for these scenarios. FLASH was developed in part by the DOE NNSA ASC and DOE Office of Science ASCR-supported Flash Center at the University of Chicago.

<sup>1</sup>Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin company, for the U.S. Department of Energy's National Nuclear Security Administration under contract No. DE-AC04-94AL85000.

Marissa Adams  
University of Rochester

Date submitted: 12 Jul 2016

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