Additions and improvements to the high energy density physics capabilities in the FLASH code[1] D. Q. LAMB, N. FLOCKE, C. GRAZIANI, P. TZEFERACOS, K. WEIDE, Flash Center for Computational Science, University of Chicago — FLASH is an open source, finite-volume Eulerian, spatially adaptive radiation magnetohydrodynamics code that has the capabilities to treat a broad range of physical processes. FLASH performs well on a wide range of computer architectures, and has a broad user base. Extensive high energy density physics (HEDP) capabilities have been added to FLASH to make it an open toolset for the academic HEDP community. We summarize these capabilities, emphasizing recent additions and improvements. In particular, we showcase the ability of FLASH to simulate the Faraday Rotation Measure produced by the presence of magnetic fields; and proton radiography, proton self-emission, and Thomson scattering diagnostics with and without the presence of magnetic fields. We also describe several collaborations with the academic HEDP community in which FLASH simulations were used to design and interpret HEDP experiments.

D. Q. Lamb
Flash Center for Computational Science, University of Chicago