

HTPD 2018



Contribution ID : 174

Type : not specified

## 2.29 Unabsorbed Light Beamlets for Diagnosing Cross-Beam Energy Transfer

Monday, 16 April 2018 10:46 (120)

A diagnostic has been fielded on OMEGA to diagnose cross-beam energy transfer (CBET) during implosions. Unabsorbed light from each laser beam is imaged as a “spot” in time-integrated images. Each spot is the end point of a beamlet that originates from a beam profile and follows a path determined by refraction. The intensity varies along that path as a result of absorption and CBET. This diagnostic allows for the investigation of the effects of CBET on laser energy from specific locations of the beam profile. The diagnostic records images in two time windows with each beamlet split into two orthogonal polarizations recorded on separate images, making it possible to determine the absolute polarization of each beamlet. When each beam is linearly polarized, CBET rotates the polarization of each beamlet. This diagnostic has provided the first evidence of polarization rotation caused by CBET during direct-drive implosions. A fully 3-D CBET hydrodynamics code postprocessor models the intensity, wavelength, and polarization of each beamlet along its path. The predicted images are compared to the images recorded by the new diagnostic. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

Primary author(s) : EDGELL, Dana (Laboratory for Laser Energetics, University of Rochester)

Co-author(s) : FOLLETT, Russell (Laboratory for Laser Energetics, University of Rochester); KATZ, Joseph (Laboratory for Laser Energetics, University of Rochester); SHAW, John (Laboratory for Laser Energetics, University of Rochester); TURNBULL, David (Laboratory for Laser Energetics, University of Rochester); FROULA, Dustin (Laboratory for Laser Energetics, University of Rochester)

Presenter(s) : EDGELL, Dana (Laboratory for Laser Energetics, University of Rochester); FOLLETT, Russell (Laboratory for Laser Energetics, University of Rochester); KATZ, Joseph (Laboratory for Laser Energetics, University of Rochester); SHAW, John (Laboratory for Laser Energetics, University of Rochester); TURNBULL, David (Laboratory for Laser Energetics, University of Rochester); FROULA, Dustin (Laboratory for Laser Energetics, University of Rochester)

Session Classification : Session #2, Monday Morning Poster Session