

P4.2004 Measurement of the hot-spot self-emission images and asymmetry tuning by varying beam cone fraction

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See the full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P4.2004.pdf>

A high degree of spherically symmetric implosion is required for inertial confinement fusion ignition. The self-emission image of hot-spot can be used to describe the integrated compression symmetry. A KB microscopy and an x-ray framing camera (XFC) have been developed for the self-emission image measurement in Laser Fusion Research Center (LFRC). The detailed introduction of these two systems will be given in this talk.

The self-emission images have been measured in the symmetry tuning experiments. The KB microscopy measured the time-integrated image, while the time-resolved images were measured by XFC. Discrepancies of shape distortion have been observed in the images from these two systems. A model based on the 1D radiation-hydrodynamic simulation has been developed to understand the discrepancy.

The experiment has shown the ability of symmetry tuning by varying the cone fraction (CF, the ratio of total inner cone beam energy over total beam energy). Also, we observed the effect of plasma bubbles caused by the laser beams on the driving symmetry.

Keywords: Inertial confinement fusion; symmetry tuning; KB microscopy, x-ray framing camera

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