

P4.2007 Development of the space-resolving flux detection technique for the localized radiation flux measurement in inertial confinement fusion

Thursday, 11 July 2019 14:00 (2 hours)

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Space-resolving flux detection (SRFD) is a novel tool for the radiation field diagnostic within the hohlraum in indirect inertial confinement fusion, as it is useful to decouple the radiation fluxes from different positions experimentally[1-4]. The typical spatial coverage of the SRFD system is about 200 μm , which is smaller than the size of the laser entrance hole (LEH), and the time resolution is about 150 ps, while uncertainty of the measured radiation flux is less than 15%. The radiation fluxes from the laser spot and re-emitted area within a vacuum cylindrical hohlraum are obtained, and good consistence is found between the experimental data and the numerical simulation with two-dimensional (2D) LARED simulation[1]. Then the radiation flux from the capsule within a gas-filled cylindrical hohlraum is obtained, and it is found to be consistent with the hydrodynamical simulation results. Moreover, this technique is also applied for the radiation flux measurement within octahedral spherical hohlraum, and radiation flux from the laser spot and re-emitted area are obtained, and it proves to be a necessary tool for the radiation field diagnostic in novel hohlraums with more than two LEHs.

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Presenter: XIE, X. (EPS 2019)

Session Classification: Poster P4

Track Classification: BPIF