

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

**First Experimental Comparisons of Laser-Plasma Interactions
between Spherical and Cylindrical Hohlräume at SGIII Laser Facility**

YAOHUA CHEN, Institute of Applied Physics and Computational Mathematics,
ZHICHAO LI, Research Center of Laser Fusion, China Academy of Engineering
Physics, KE LAN, Institute of Applied Physics and Computational Mathematics

— In this report, we introduce our recent laser-plasma instability (LPI) comparison experiment at the SGIII laser facility between the spherical hohlraums and the cylindrical hohlraums. Three kinds of filling are considered: vacuum, gas-filling with or without a capsule inside. The experiment has shown that the LPI level in the spherical hohlraum is close to that of the outer beam in the cylindrical hohlraum, while much lower than that of the inner beam. The experiment is further simulated by using our 2-dimensional radiation hydrodynamic code LARED-Integration, and the laser back-scattering fraction and the SRS spectrum are post-processed by the high efficiency code of laser interaction with plasmas HLIP. According to the simulation, the plasma waves are strongly damped and the SRS is mainly developed at the plasma conditions of electron density from 0.08 n_c to 0.1 n_c and electron temperature from 1.5 keV to 2.0 keV inside the hohlraums. However, obvious differences between the simulation and experiment are found, such as that the SRS back-scattering is underestimated, and the numerical SRS spectrum peaks at a larger wavelength and at a later time than the data.

Wenyi Huo
Institute of Applied Physics and Computational Mathematics

Date submitted: 05 Jun 2017

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