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Hohlraum energetics study on Shenguang-III prototype laser facility DONG YANG, SANWEI LI, ZHICHAO LI, RONGQING YI, LIANG GUO, XIAOHUA JIANG, SHENYE LIU, JIAMIN YANG, SHAOEN JIANG, YONGKUN DING, Research Center of Laser Fusion, China Academy of Engineering Physics, Mianyang 621900, China, SHIYANG ZOU, YIQING ZHAO, XIN LI, WENYI HUO, HUASEN ZHANG, YONGSHENG LI, KE LAN, Institute of Applied Physics and Computational Mathematics, Beijing 100088, China — Comprehensive and accurate characterization of hohlraum drive need to use a variety of methods resolving different photon range and multiple viewing area. In recent years, hohlraum physics have been studied extensively on Shenguang-III prototype. These experiments employed mainly Au hohlraum with or without a capsule, heated by smoothing beams where scattering loss is less than 10%. With compact flat-response X-ray detector array and 14-channel soft X-ray spectrometer, the radiation flux is measured through the laser entrance hole(LEH) or diagnostic hole(DH) at different photon range and multiple line of sight. The difference in radiation between laser spot and re-emitting wall, the time history of capsule absorbing and emitting flux, is quantitatively studied to interpret flux onto the capsule. The radiation driven shock propagating in Al and Ti sample placed over a hole in the hohlraum wall, which is more representative of the drive inside the hohlraum, also provide a unique information of radiation. In order to better improve our physics model, the motion of laser ablated bubble and radiation ablated blow-off plasma is directly measured, and their effects on laser absorption and X-ray escaping LEH as well as flux diagnostics are evaluated.

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