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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, SHIYANG ZOU, HUASEN ZHANG, YIQING ZHAO, WENYI HUO, XIN LI, YONGSHENG LI, KE LAN, Institute of Applied Physics and Computational Mathematics — Comprehensive and accurate characterization of the hohlraum drive needs to use a variety of methods resolving different photon ranges and multiple viewing areas. In recent years, hohlraum physics have been studied extensively on Shenguang-III prototype laser facility. These experiments employed mainly Au hohlraums (vaccum or gas-filled, with capsule or not) 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 from several specific regions inside the hohlraum is measured through the laser entrance hole (LEH) or the diagnostic hole (DH) at different photon ranges and multiple lines of sight. The difference in radiation between the laser spot and the reemitting wall is quantitatively studied to interpret flux onto the capsule. 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 are evaluated. In addition, the radiation driven shock propagating in Al and Ti placed on the hohlraum wall, which is more representative of the drive inside the hohlraum, provide a unique information of radiation.

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