

Abstract Submitted
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Determining the hohlraum radiation temperature and M-band fraction by using shock wave technique on SGIII-prototype laser facility WENYI HUO, KE LAN, YONGSHENG LI, Institute of Applied Physics and Computational Mathematics, DONG YANG, SANWEI LI, Research Center of Laser Fusion, Chinese Academy of Engineering Physics — Experiments have been conducted on SGIII-prototype laser facility using two materials Al and Ti as shock wave witness plates. The radiation temperature T^{R} and M-band fraction f^{M} inside a hohlraum are determined by using the observed shock velocities in Al and Ti. This is the first experimental demonstration of the proposal that T^{R} and f^{M} can be simultaneously determined by using shock wave technique [Y. S. Li, *et al.*, Phys. Plasmas **18**, 022701 (2011)]. For the Au hohlraum used in the experiments, T^{R} is about 160 eV and f^{M} is around 4.3% under a 1 ns laser pulse of 2 kJ. The results from this technique are complementary to those from the broadband soft x-ray spectrometer (SXS), and the technique can be used to determine T^{R} and f^{M} inside an ignition hohlraum.

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