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The hohlraum radiation temperature and M-band fraction on the SGIII-prototype laser facility WENYI HUO, Institute of Applied Physics and Computational Mathematics, DONG YANG, Research Center of Laser Fusion, Chinese Academy of Engineering Physics, KE LAN, Institute of Applied Physics and Computational Mathematics, SANWEI LI, Research Center of Laser Fusion, Chinese Academy of Engineering Physics, YONGSHENG LI, Institute of Applied Physics and Computational Mathematics — The hohlraum radiation temperature and M-band fraction are determined by a shock-wave technique and measured by a broadband soft x-ray spectrometer. The peak radiation temperature T_R and M-band fraction f_m are simultaneously determined by using the observed shock velocities in Al and Ti. For the vacuum Au hohlraum used in the experiments, T_R is about 160 eV and f_m is between 4.3-6.3% under 1ns laser pulse of 2 k. And T_R is about 202 eV and f_m is about 9% with laser energy 6 kJ . The Continuous Phase Plate (CPP) for beam smoothing is applied in the experiment, which increases T_R to 207 eV while has almost no influence on f_m. Comparisons between the results from the two kinds of technologies show that T_R from the shock wave technique is lower than that from SXS whether CPP is applied or not. However, f_m from the shock wave technique is consistent with that from SXS without CPP, but obviously lower than the SXS's result with CPP.

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