

Abstract Submitted
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Preheating study by VISAR measurements in laser-driven shocks on SGII facility¹ XIUGUANG HUANG, Professor, HUA SHU, Assistant Professor, SIZU FU, Professor, JUNJIAN YE, Associate Professor, ZHIHEN FANG, GUO JIA, ZHIYONG XIE, HUAZHEN ZHOU, Assistant Professor, TAO WANG, None, SHANGHAI INSTITUTE OF LASER PLASMA TEAM — The preheating of laser-irradiated aluminum planar or multi-step targets has been measured by velocity interferometer system for any reflector (VISAR), which detects the target's rear surface motion prior to shock wave breakout. The preheating temperature was induced from the linear expansion theory and release isentrope data, respectively. And the results calculated from both methods are consistent. The results also show that the preheating temperature decreases nearly linear with decreasing laser energy or increasing foil's thickness. Moreover, the preheating effects drop sharply by only burying a thin high-Z layer ($\sim 1.5\mu\text{m}$ Au) in the aluminum foil. Base on above results and other results from X-ray crystal spectrometer, electron energy spectrometer, and our analytical calculation, we think that the source of preheating is mainly of hard X-ray.

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