**High Resolution Radiography Researches Based on Picosecond Laser: A Review of Experiments at Shenguang II Upgraded Facility**

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High spatial resolution X-ray radiography has widely applications in inertial confinement fusion (ICF) and high energy density physics (HEDP) experiments. Generally, the X-ray sources used in ICF and HEDP experiments are produced by high energy nanoseconds laser heating a planner target, with which a high resolution radiography must been with the aid of imaging elements. Unlike long-pulse laser drive X-ray sources with large size and nanosecond orders pulse duration, the short-pulse laser drive X-ray sources with short pulse and higher X-ray energy, thus higher penetrating power, but no imaging elements, its imaging diagnostics generally work in point projection mode. In this talking, the x-ray source characters and imaging diagnostic researches at Shenguang II upgrated facility based on short pulse laser will be reviewed. Time-resolved radiographic images of the ICF targets were obtained with hard X-rays generated by irradiating a short-pulse laser on a metal microwire. High-resolution X-ray flash radiography of Ti characteristic lines with a multilayer Kirkpatrick–Baez microscope was also developed on the Shenguang-II (SG-II) Update laser facility. The optical design, multilayer coatings, and alignment method of the microscope and the experimental result of Ti flash radiography of the Au-coned CH shell target on the SG-II Update are described.

References

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