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Progress in spherical hohlraum studies and experimental campaign on high energy laser facilities in China

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We began to study the octahedral spherical hohlraums in 2013, and we have made both theoretical and experimental progresses in spherical hohlraum study since then. From our theoretical studies, we gave the configuration, concept and design of the octahedral spherical hohlraums, proposed a novel octahedral spherical hohlraum with cylindrical laser entrance holes (LEH) and LEH shields, compared the robustness of the octahedral spherical hohlraum with that of the cylindrical hohlraum and the rugby hohlraum, and gave a design island for determining the geometrical sizes of octahedral spherical hohlraum for ignition target design. Up till to now, we have a series experiments in the Spherical Hohlraum Campaign on SG laser facilities since 2014, such as, improvement of laser transport by using the cylindrical LEH, comparisons of LPI between sphere and cylinder, LPI of spherical hohlraum under high intensity laser, energetic of 6LEH Spherical hohlraum, and so on. As a result of our theoretical and experimental studies, the octahedral spherical hohlraum has advantages in a natural and robust high symmetry without supplementary technology, a high energy coupling efficiency, and a low LPI. In addition, we supposed to use the 4ω - 2ω lasers for future ignition facility with a configuration designed for the octahedral spherical hohlraum.

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