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A Novel Spherical Hohlraum Design with Tetrahedral 4 Laser Entrance Holes and High Radiation Performance YUNBAO HUANG, Key Laboratory of Computer Integrated Manufacturing System, Guangdong University of Technology, LONGFEI JING, SHAOEN JIANG, Research Center of Laser Fusion, China Academy of Engineering Physics — As usual cylindrical hohlraum with double laser ring cones may lead to serious CBET, and LPI effect, spherical hohlraum with octahedral 6 LEHs and single laser ring cone is investigated and presented to achieve higher radiation symmetry during the fusion process. However, it has several potential problems such as the long run distance and the close distance between the spot and their closet LEH for the laser beams, smaller space is left for diagnose, and the assembly of centrally located capsule. In this paper, based on view-factor transportation model, we investigate the radiation symmetry and the drive temperature on the centrally located capsule in the spherical hohlraum with tetrahedral 4 LEHs and single laser ring cone, since there is more available space for laser disposition and diagnose. Then, such target is optimized on the laser beam pointing direction and shape sizes to achieve high radiation performance, or the radiation symmetry and drive temperature on the capsule.Finally, a novel spherical hohlraum with optimal laser beam pointing and shape size has been demonstrated to have almost similar radiation symmetry (the radiation asymmetry variation is no more than 0.2%), and higher drive temperature (the temperature has been increased by 1.73%, and additional 133 KJ energy of 2MJ energy for fusion can be utilized).

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