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A hybrid drive ignition model for inertial confinement fusion using spherical hohlraum-capsule target HE XIAN-TU, Institute of Applied Physics and Computational Mathematics, Beijing 100088, China, IAPCM TEAM — An indirect-direct hybrid drive ignition model for inertial confinement fusion is proposed: the fusion capsule in a spherical hohlraum with six laser entrances and radiation non-uniformity of a few in thousand is compressed first by indirect-drive x rays and then by direct-drive lasers. Numerical simulations show that the hybrid drive produces a higher-density plateau between radiation and electron ablation fronts separately generated by indirect-drive x rays and direct-drive lasers. Such a density plateau ahead of the imploding capsule under the indirect-drive temperature ablation produces a stationary piston-like high-pressure structure with pressure of hundreds Mbar, which drives an enhanced shock wave (ES). The ES fleetly moves towards the imploding capsule center and stops the indirect-drive shock multiple reflections at the interface of hot spot/main fuel, and thus hydrodynamic instabilities and the asymmetry amplification are prevented there. A rapid non-isobaric hot spot ignition before stagnation is performed.

He Xian-Tu
Institute of Applied Physics and Computational Mathematics,
Beijing 100088, China

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