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Robust target implosion in heavy ion fusion¹ SHIGEO KAWATA, YOSHIFUMI IIZUKA, TOMOHIRO KODERA, Utsunomiya University, ALEXANDAR OGOYSKI, Technical University of Varna — In heavy ion inertial fusion (HIF) a robust mode of target implosion is proposed to mitigate the beam illumination non-uniformity and the Rayleigh-Taylor (R-T) instability growth. In the HIF target implosion, key issues include uniformity of heavy ion beam (HIB) illumination, target implosion symmetry, compressed fuel ignition, reduction of the R-T instability growth, etc [1]. In the robust target in HIF, an oscillating implosion acceleration is employed to reduce the R-T instability growth, and a low-density foam layer is also inserted to enhance the radiation conversion efficiency from. The oscillating acceleration can be introduced by HIB axis oscillation, which can be easily realized in an actual accelerator final element. The oscillating acceleration introduces a new method of the R-T instability growth control. In the robust foam target, the radiation converted is confined and reduces the HIB illumination non-uniformity, though the HIBs illumination scheme is spherically symmetric and the target is also spherically symmetric. Therefore, the foam target irradiated by the oscillating HIBs can serve a robust direct-indirect hybrid mode of the symmetric target implosion in HIF. [1] Phys. of Plasmas, 12 (2005) 122702; NIMA, 577 (2007) 21.

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