Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

**Robust Direct-Indirect Hybrid Target Implosion in Heavy Ion Fusion**[1] S. KAWATA, Y. HISATOMI, Utsunomiya University, A.I. OGOYSKI, Tech. Univ. of Varna, S. KOSEKI, T. KUROSAKI, D. BARADA, Utsunomiya University — In inertial fusion target implosion, beam illumination non-uniformity must be reduced to less than a few percent. In this study a direct-indirect hybrid implosion mode is discussed in heavy ion beam (HIB) inertial confinement fusion (HIF) in order to release sufficient fusion energy in a robust manner. On the other hand, the HIB illumination non-uniformity depends strongly on a target displacement dz from the center of a fusion reactor chamber. In a direct-driven implosion mode, dz of about 20 micron m was tolerable, and in an indirect-implosion mode, dz of about 100 micron m was allowable. In the direct-indirect hybrid mode target, a low-density foam layer is inserted, and the radiation energy is confined in the foam layer. In the foam layer the radiation transport is expected to smooth the HIB illumination non-uniformity. Two-dimensional implosion simulations are performed, and show that the HIB illumination non-uniformity is well smoothed in the direct-indirect mixture target. The results also present that dz of a few hundred micron m is allowed in HIF.

[1]Supported partly by JSPS, MEXT, ILE/Osaka Univ., CORE/Utsunomiya Univ and HIF-VNL/LBNL.

S. Kawata
Utsunomiya University

Date submitted: 18 Jun 2010 Electronic form version 1.4