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ADVANCES IN HIGH EFFICIENCY COUPLING TO HEAVY ION DIRECT DRIVE AND APPLICATION TOWARDS SMALL TEST REACTORS (SUB MJ DRIVE FUSION AND FUSION-FISSION HYBRIDS)

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Publication Date

2010-09-01

HIFAN 1648a

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by

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September 2009

This work was supported by the Director, Office of Science, Office of Fusion Energy Sciences, of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.

ADVANCES IN HIGH EFFICIENCY COUPLING TO HEAVY ION DIRECT DRIVE AND APPLICATION TOWARDS SMALL TEST REACTORS (SUB MJ DRIVE FUSION AND FUSION-FISSION HYBRIDS)*

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1-D Lasnex calculations show efficient (15 to 20%) hydro-coupling of heavy ion beams to direct drive targets without hohlraums at less than 1 MJ drive energy. Beam symmetry studies show that 60 beams may suffice with rotated beam spots on the ablator. NIF scale capsules with low aspect ratio $A < 2$ for robust RT stability show 1-D gains ~ 50 at drive energies of 350 to 450 kJ. Application to small heavy ion fusion test reactors with $\langle P_e \text{ net} \rangle \sim 10 \text{ MWe}$, and to small fission fusion hybrids @ $\sim 30 \text{ MWe}$ net power scale are considered.

*Research supported by the US Department of Energy under Contracts DE-AC02-05CH1123, DE-AC52-07NA27344 , and DE-AC02-76CH03073.

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