

PROGRESS TOWARDS A DETAILED TSUNAMI MODELING OF THE HEAVY ION FUSION MODULAR POINT DESIGN

C.S. Debonnel, S.S. Yu, Lawrence Berkeley National Laboratory, 1 Cyclotron
Road, Berkeley, CA, 94720

P.F. Peterson, University of California, Berkeley, CA 94720

The “robust point design” (RPD) [1] describes a self-consistent heavy-ion inertial fusion power plant based on a single linear accelerator and the neutralized ballistic beam transport scheme. The heavy-ion fusion community is exploring the feasibility of a modular power plant, with several, smaller accelerators---this approach has the potential to offer a faster and cheaper development path to a viable fusion power plant. The Berkeley hydrodynamics code TSUNAMI is being used to model x-ray ablation and gas venting in the target chamber and beam tubes of the yet-to-be-finalized modular point design. Gas dynamics simulations are presented along with a comparison to a previous RPD modeling [2]. The need for this modeling stems from strict requirements on background gas density set to achieve proper beam and target propagation; differences between limits imposed by various beam propagation schemes are highlighted.

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