

Abstract Submitted  
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**Radiation Hydrodynamic Parameter Study of Inertial Fusion Energy Reactor Chambers** RYAN SACKS, GREGORY MOSES, University of Wisconsin-Madison — Inertial fusion energy reactors present great promise for the future as they are capable of providing baseline power with no carbon footprint.<sup>1</sup> Simulation work regarding the chamber response and first wall insult is performed with the 1-D radiation hydrodynamics code BUCKY.<sup>2</sup> Simulation with differing chamber parameters are implemented to study the effect of gas fill, gas mixtures and chamber radii. Xenon and argon gases are of particular interest as shielding for the first wall due to their high opacity values and ready availability. Mixing of the two gases is an attempt to engineer a gas cocktail to provide the maximum amount of shielding with the least amount of cost. A parameter study of different chamber radii shows a consistent relationship with that of first wall temperature ( $\sim 1/r^2$ ) and overpressure ( $\sim 1/r^3$ ).<sup>3</sup> This work is performed under collaboration with Lawrence Livermore National Laboratory.

<sup>1</sup>J.F. LATKOWSKI *et al.*, *Fusion Sci. Tech.* **60**, 54 (2011)

<sup>2</sup>R.R. PETERSON *et al.*, *Phys. Of Plasmas* **9**, 2287 (2002)

<sup>3</sup>R. SACKS *et al.*, *Fusion Sci. Tech.*, *publication pending*.

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