

# HIF CHAMBER PHENOMENA AND DESIGN\*

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A strong linkage exists between chamber conditions and the propagation and focusing of heavy ion beams for the production of inertial fusion energy. Heavy-ion fusion (HIF) adapts well to the use of liquids, like the molten salt fluoride, in chambers. Liquids protect the surfaces of chamber structures from ablation by target x rays, and attenuate and stop fusion neutrons, reducing damage to structural materials. HIF chamber research has identified a wide variety of liquid configurations that can be applied for chamber protection. This presentation summarizes recent progress in research on HIF chambers, including x-ray ablation, debris venting and condensation, liquid response and regeneration, and chamber reliability and safety. Novel liquid configurations that have been developed, including very smooth jets, oscillating porous liquid structures, and vortex flows, are also discussed.

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