

# PROGRESS ON Z-PINCH IFE AND HIF TARGET WORK ON Z\*

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And the Z-Pinch IFE Team and the HIF Team collaborators

The long-range goal of the Z-Pinch IFE program is to produce an economically-attractive power plant using high-yield z-pinch-driven targets (~3GJ) with low rep-rate per chamber (~0.1 Hz). The present mainline choice for a Z-Pinch IFE power plant uses an LTD (Linear Transformer Driver) repetitive pulsed power driver, a Recyclable Transmission Line (RTL), a dynamic hohlraum z-pinch-driven target, and a thick-liquid wall chamber. The RTL connects the pulsed power driver directly to the z-pinch-driven target, and is made from frozen coolant or a material that is easily separable from the coolant (such as low activation ferritic steel). The RTL is destroyed by the fusion explosion, but the RTL materials are recycled, and a new RTL is inserted on each shot. The Z-Pinch IFE program includes research on all aspects of the RTL, repetitive pulsed power, shock mitigation (due to the large fusion yields), automated RTL operation, z-pinch-driven targets, and power plant technology development (thick-liquid wall chambers, target fabrication, activation and waste stream analysis, etc.). Recent progress in all of these areas will be discussed.

HIF and Z-Pinch IFE have several closely-related development areas, including indirect-drive targets, thick liquid walls, repetitive driver pulsed power, target fabrication issues, waste stream analysis, etc. Active collaborations have been formed between the HIF program and the Z-Pinch IFE program to address several of these common issues. Progress in all of these areas will be discussed, with special emphasis on P4 target symmetry experiments on Z.

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