

Abstract Submitted
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Shrapnel Formation in a Z-Pinch Power Plant¹ JOHN DE GROOT,
N. GRONBECH-JENSEN, University of California Davis — The mainline z-pinch
IFE power plant design has a recyclable transmission line (RTL) that drives a fusion
capsule with output energy in the range of about 3 GJ. The deposition of this energy
will result in the RTL close to the target being transformed to high temperature
plasma. The RTL farther away from the fusion capsule will be converted to liquid
and shrapnel. The shrapnel is composed of droplets, aerosols, liquid, and solid metal.
Continuum theory and molecular dynamics calculations are being used to quantify
the shrapnel production as a result of spallation driven by shock reflection. The
study will also focus on the essential issue of the defect content in the RTL material.
We are developing scaling laws that show which sections of the RTL are turned into
plasma, droplets, aerosols, liquid, and solid metal. We are also evaluating the effects
of post-shot EMP, plasma, droplets, and shrapnel up the RTL.

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John De Groot
University of California Davis

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