

Abstract Submitted
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Breakeven Fusion in Staged Z Pinch¹ HAFIZ RAHMAN, University of California, PAUL NEY, Mount San Jacinto College, NORMAN ROSTOKER, FRANK WESSEL, University of California — We are studying the prospect for breakeven thermonuclear fusion considering a Mega joule (MJ) class, 100 ns, impulse generator using a modified version of MACH2, a 2-1/2 D, radiation-code. The load is a cylindrical, xenon plasma shell that implodes radially onto a co-axial, deuterium-tritium plasma target. Optimized plasma density and pinch radius lead to a fusion-energy output that is many times the stored capacitor bank energy. In this “Staged Z-pinch” shock fronts form that preheat the DT plasma to several hundred eV, before adiabatic compression. During compression, the Xe liner becomes Rayleigh-Taylor (RT) unstable while the DT target remains stable. Proper selection of the initial pinch radius and plasma density is crucial for optimum implosion efficiency.

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Frank Wessel
University of California

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