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K-shell Radiation Source of a Low Z Puff on a High Z Jet[1]
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— We examine a Z-pinch gas puff load wherein the JxB coupled energy from the generator is coupled to the ion thermal and kinetic energy of an outer, imploding low Z pusher. The central jet is the target K-shell emitter of larger Z. At assembly on axis, the kinetic energy of the pusher is dissipated, and during the strong compression, the excess ion thermal energy of the pusher is transferred to the electrons of the jet producing excitation and radiation from the high Z target. An analysis of the dynamics is first presented through a 0-D snowplow model to show that with a centrally peaked initial density profile the kinetic energy of implosion can be half of the total JxB energy [1]. Next we present 2-D Mach2-TCRE simulations for the ZR generator of a Ne puff onto a central Kr jet. The capability of this load design for producing K-shell emission from Kr will be examined.

[1] J.L. Giuliani and R.J. Commisso, "A Review of the Gas-Puff Z Pinch as an X-Ray and Neutron Source," accepted in IEEE Trans. Plasma Sci. June, 2015.

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