

A model of cusp magnetic field compression by an expanding plasma fireball*

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The outward plasma expansion from an Inertial Confinement Fusion (ICF) target in a cusp magnetic field configuration is studied. Closed form solutions are derived for the distorted magnetic flux in the case of a nearly spherically symmetric expansion, and the maximum (stopping) radius of the field-free plasma. For a typical ~ 100 MJ micro-explosion, a magnetic field strength of only 0.1 T in the line cusp leads to a stopping radius slightly less than the ~ 6 m radius of the target chamber. Consequently, energetic ions can be prevented from contacting the wall and doing damage.

*Work supported by the U.S. Naval Research Laboratory under N00173-03-C6010.