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Toroidal Field Effects in a Magnetized Target Fusion (MTF) Plasmoid THOMAS WEBER, JASON SEARS, THOMAS INTRATOR — The FRXL and FRCHX experiments at Los Alamos National Laboratory and the Air Force Research Laboratory seek to understand the physics of a Field Reversed Configuration (FRC) target plasma undergoing compression within a contracting, flux conserving liner. In each experiment, the target FRC is formed using the field-reversed theta pinch method within a conical formation region. This simultaneously forms and accelerates the FRC out of the formation region and into the liner for compression. Large cone angles produce large axial forces, leading to shorter translation timescales, which can ease FRC lifetime requirements, but also result in a plasmoid with a significant degree of toroidal magnetic field. The presence of this field may lead to additional stability and longer lifetime, however, it may also be detrimental to the compression process. The geometry of these experiments allows the cone angle to be altered with relative ease, presenting a unique opportunity for the study of the effects of varying amounts of toroidal field within an MTF plasmoid.

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