

Abstract Submitted
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Reproducible High Density Field-Reversed Configuration Plasma for Magnetized Target Fusion¹ SHOUYIN ZHANG, THOMAS INTRATOR, GLEN WURDEN, WILLIAM WAGANAAR, RICHARD RENNEKE, IVO FURNO, JAEYOUNG PARK, SCOTT HSU, Los Alamos National Laboratory, Los Alamos, NM 87545, CHRIS GRABOWSKI, Sci. Appl. Inter. Corp. Albuquerque, NM 87117, EDWARD RUDEN, JAMES DEGNAN, Air Force Res. Lab. Albuquerque, NM 87117, FRC-MTF TEAM, MTF TEAM — Field-Reversed Configuration (FRC) plasma will be translated into an imploding metal liner in a Magnetized Target Fusion (MTF) scenario. Field-Reversed Theta Pinch technology is employed with programmed cusp fields at the theta coil ends to achieve non-tearing field line reconnection during FRC formation. In the Field Reversed Configuration Experiment with a Liner (FRX-L), an optimum formation procedure is identified. The well-formed FRC plasma has volume-averaged density of $2 - 4 \times 10^{22} \text{m}^{-3}$, $T_e + T_i$ of 300-500 eV, and plasma lifetime between 15-20 μs . These parameters are very close to the desired parameters of a target plasma for MTF, and they can be reproduced with standard deviation of less than 10% about the mean in consecutive discharges. Recently, the redesigned crowbar switches have reduced the external main field modulation from 52% previously to 21% now. Better FRC performance is expected in on-going experimental campaigns.

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Shouyin Zhang
Los Alamos National Laboratory

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