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The effects of neutral beam injection on momentum transport and rotation resulting from reconnection events in a Reversed Field Pinch
T. DOBBINS, M.D. NORBERG, J.K. ANDERSON, D.J. DEN HARTOG, J.A. REUSCH, JOHN SARFF, SCOTT EILERMAN, UW Madison, DARREN CRAIG, Wheaton College — Magnetic reconnection events are characterized by rapid transport that flattens both the plasma current and parallel flow profiles in a RFP. The tangential neutral beam on the MST is a source of momentum injection into the MST that has also been observed to suppress the core-most mode of the plasma. Ensembles of multiple sawtooth events with and without the NBI were performed over a variety of plasma conditions to observe any effects of the NBI on sawtooth crashes. Observations of both mode rotation and impurity emission Doppler shifts show an increase in toroidal rotation associated with the neutral beam. The suppression of the core-most mode was verified for a broader variety of plasmas than before. The mode data also shows that for some plasma parameters the NBI brings a mode into resonance that is not resonant without the NBI. This is the first evidence of the NBI's effect on the plasma current profile. In addition, Co-injection greatly reduces the mode locking, while counter-injection has been shown to slightly increase mode locking.

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