

Abstract Submitted
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Fast Ion Generation in the MST¹ RICHARD MAGEE, BRETT CHAPMAN, DAVID ENNIS, GENNADY FIKSEL, ROB O'CONNELL, University of Wisconsin - Madison, MADISON SYMMETRIC TORUS TEAM, CENTER FOR MAGNETIC SELF-ORGANIZATION COLLABORATION — Reversed-field pinch plasmas in the MST are punctuated by bursts of tearing mode activity, which release energy stored in the magnetic field and strongly heat the ions. There are two indications that some of these reconnection events generate a population of suprathermal ions. The first is that the neutron flux from the plasma tends to be higher than that expected from thermal fusion based on the measured impurity temperature. Because the D-D fusion cross section is much larger for higher energy ions, a small, fast population can resolve this discrepancy. The second is that fast, charge exchange neutrals are sometimes observed in a neutral particle energy analyzer. An attempt to experimentally reconstruct the energy spectrum of these particles will be described. One hypothesis for these observations is that a mean electric field associated with current profile relaxation is creating runaway ions. To investigate, computational work has been done to determine the implied ion distribution function and the conditions necessary to produce it.

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Richard Magee
University of Wisconsin - Madison

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