Abstract Submitted
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Suppression of high-energy electrons generated in both disrupting and sustained MST tokamak plasmas[1] M.D. PANDYA, B.E. CHAPMAN, University of Wisconsin-Madison, S. MUNARETTO, General Atomics, B.S. CORNILLE, K.J. MCCOLLAM, C.R. SOVINEC, University of Wisconsin-Madison, A.M. DUBOIS, Tri Alpha Energy, A.F. ALMAGRI, J.A. GOETZ, University of Wisconsin-Madison — High-energy electrons appearing during MST tokamak plasma disruptions are rapidly lost from the plasma due apparently to internal MHD activity. Work has just recently begun on generating and diagnosing disruptions in MST tokamak plasmas. Initial measurements show the characteristic drop in central temperature and density preceding a quench of the plasma current. This corresponds to a burst of dominantly n=1 MHD activity, which is accompanied by a short-lived burst of high-energy electrons. The short-lived nature of these electrons is suspected to be due to stochastic transport associated with the increased MHD. Earlier work shows that runaway electrons generated in low density, sustained plasmas are suppressed by a sufficiently large m=3 RMP in plasmas with q(a)<3. RMPs of various poloidal mode number can be generated with an array of saddle coils wound around the vertical insulated gap in MST's thick conducting shell. With an m=3 RMP, the degree of runaway suppression increases with RMP amplitude, while an m=1 RMP has little effect on the runaways[1]. Nonlinear MHD modeling with NIMROD of these MST plasmas indicates increased stochasticity with an m=3 RMP, while no such increase in stochasticity is observed with an m=1 RMP. [1] S. Munaretto et al., PoP in preparation.

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