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Direct Comparison of Simulated Sawtooth Evolution to the Madison Symmetric Torus RFP[1] J.A. REUSCH, J.K. ANDERSON, D.J. DEN HARTOG, F. EBRAHIMI, C.B. FOREST, R. O'CONNELL, D.D. SCHNACK, H.D. STEPHENS, University of Wisconsin - Madison — It has long been believed that the reversed field pinch has stochastic magnetic field lines and exhibits Rechester-Rosenbluth thermal transport under standard operating conditions. In this poster, results from a set of first principles simulations using the resistive MHD code DEBS will be presented. The simulations are designed to match experimental data as closely as possible. To that end, both a Spitzer and a neoclassical resistivity model were tried for the cases of a fixed, experimentally measured resistivity. A freely evolving resistivity based on an evolving pressure profile was also examined. The fixed resistivity calculations were done at a Lundquist number of 10^6 and the evolving pressure calculations had an average Lundquist number of approximately 4×10^6. The expected Rechester-Rosenbluth electron thermal diffusion, $\chi_{RR} = v_{T_e} \pi L_{eff} \tilde{b}^2 / B^2$, is compared to the measured thermal diffusion obtained through power balance. Furthermore, in the evolving pressure case, the temperature profile information is extracted and compared directly to Thomson scattering measurements.

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Joshua Reusch
University of Wisconsin - Madison

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