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Damping of Energetic-Particle-Driven Alfven Eigenmodes in Different Magnetic Equilibria in the MST Reversed-Field Pinch STEPHANIE SEARS, JAY ANDERSON, WILLIAM CAPECCHI, PHILLIP BONOFIGLO, JUNGHA KIM, University of Wisconsin-Madison — Alfven wave dissipation is an important mechanism behind anomalous ion heating, both in astrophysical and reversed-field pinch (RFP) plasma systems. Additionally, the damping rate has implications for the stability of energetic particle driven modes (EPMs) and their associated nonlinear dynamics and fast ion transport, which are crucial topics for any burning plasma reactor. With a 1 MW neutral beam injector on the MST RFP, a controlled set of EPMs and Alfvenic eigenmodes can be driven in this never-before-probed region of strong magnetic shear and weak externally applied magnetic field. The decay time of the average of 100s of reproducible bursts is computed for different equilibrium profiles. In this work, we report initial measurements of Alfvenic damping rates with varied RFP equilibria (including magnetic shear and flow shear) and the effects on fast ion transport. This research is supported by DOE and NSF.

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