

Abstract Submitted
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Selective decay in a long cylindrical geometry in SSX¹ T. GRAY, M. BROWN, D. DANDURAND, X. ZHANG, Swarthmore College — A helical, minimum-energy relaxed plasma state has been observed in a long cylindrical volume. The cylinder is long enough ($L/R = 13$) so that the predicted minimum energy state is a close approximation to the infinite cylinder solution. The plasma is injected at $v \geq 50$ km/s by a coaxial magnetized plasma gun located at one end of the cylindrical volume. The relaxed state is rapidly attained in 1–2 axial Alfvén times after initiation of the plasma. Magnetic data is favorably compared with an analytical model. Magnetic data exhibits broadband fluctuations of the measured axial modes during the formation period. The broadband activity rapidly decays as the energy condenses into the lowest energy mode, which is in agreement to the minimum energy eigenstate of $\nabla \times \vec{B} = \lambda \vec{B}$. Merging experiments are planned and additional data will be presented if available.

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