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Nonaxisymmetric relaxed state in an elongated cylinder[1]
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— Co-helicity spheromak merging experiments within an elongated cylindrical flux conserver at the Swarthmore Spheromak Experiment (SSX) produce a final state magnetic configuration that is nonaxisymmetric, twisted along the geometric axis of the cylindrical flux conserving boundary, and quiescent. The lack of dynamics suggests a minimum energy state, and is tentatively identified as the Taylor state. The observed magnetic field structure is compared to the results of a finite element algorithm (Chu, Jensen, and Dy, Phys. Fluids **25**, 1611) which determines the nonaxisymmetric Taylor state within the cylindrical boundary. The algorithm iterates a two step procedure: the first step minimizes magnetic energy while obeying the ideal MHD constraints, and the second breaks the MHD constraints but enforces the Taylor state requirement of uniform J/B. Merging dynamics and final state structure computed using the 3D MHD code HYM are also compared.

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