

Abstract Submitted
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Stabilization of Tokamak Plasmas by the Addition of Nonaxisymmetric Coils¹ ALLAN REIMAN, Princeton Plasma Physics Lab — It has been recognized since the early days of the fusion program that stellarator coils can be used to stabilize current carrying, toroidal, magnetically confined plasmas.[1] More recently, it has been shown that the vertical mode in a tokamak can be stabilized by a relatively simple set of parallelogram-shaped, localized, nonaxisymmetric coils.[2] We show that by superposing sets of these parallelogram-shaped, nonaxisymmetric coils at different locations, it is possible to reproduce the coil current patterns for conventional stellarator coils as well as those for Furth-Hartman coils[3]. This allows us to gain insight into the physics of stabilization produced by various sets of nonaxisymmetric coils by analysis of the effect on stability of localized coils at differing locations. In particular, the relationship between the stabilization effect and the rotational transform generated by the nonaxisymmetric coils is clarified.

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