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Bifurcated Equilibria and Magnetic Islands in Tokamaks[1] PAUL R. GARABEDIAN, Courant Institute-NYU — The NSTAB code captures islands successfully despite a nested surface hypothesis made in the coordinate system that is employed. The resolution of the code can be checked by applying it to the vacuum field of stellarators where islands are known to exist in equilibria found by other methods. The same numerical construction produces slender islands in tokamaks like the DIII-D and ITER. When those three-dimensional solutions of the tokamak problem are used in Monte Carlo computations of the energy confinement time, no anomalous transport occurs in the results. The physical significance of finding many three-dimensional MHD equilibria in axially symmetric tokamaks needs further investigation. More specifically, one can ask how much their effect might contribute to the prompt loss of α particles or to disruptions.

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