Nonaxisymmetric Local Magnetostatic Equilibrium

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Abstract

In this work we outline an approach to the problem of local equilibrium in non-axisymmetric configurations that adheres closely to Miller's original method for axisymmetric plasmas [R.L. Miller, et al., Phys. Plasmas **5**, 973 (1998)]. We also describe a spectral method for solution of the resulting partial differential equations. We verify the correctness of the spectral method, in the axisymmetric limit, through comparisons with an independent numerical solution. Some analytic results for the two-dimensional case are given, and the connection to Boozer coordinates is clarified.