Transforming between Boozer and VMEC coordinates[1] K. LENNARD, A.S. WARE, University of Montana, S.P. HIRSHMAN, Oak Ridge National Laboratory — A method of transforming between straight-field line Boozer coordinates and Fourier- optimized VMEC coordinates is discussed. A number of numerical codes exist that transform from VMEC (or cylindrical) coordinates to Boozer coordinates. Optimizations of stellarator configurations often target properties of the configuration in Boozer coordinates but the optimization are performed in VMEC coordinates. Each configuration must be transformed to Boozer coordinates to calculate the target quantities (e.g., quasi-symmetry). In this work we provide one such transformation method and develop an inverse method to transform from Boozer coordinates back to VMEC coordinates. This technique would allow possible future optimizations to be performed directly in Boozer coordinates with a transformation back to VMEC coordinates only after the optimization is complete.

Andrew Ware
University of Montana

Date submitted: 19 Jul 2011

Electronic form version 1.4