

METRIC COEFFICIENTS FOR A STELLARATOR CONFIGURATION

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The metric coefficients are analytically calculated for a non-axisymmetric stellarator configuration with a complex shape of the magnetic axis and the magnetic field varying along the axis. Calculations are performed in a working coordinate system, which is a flux coordinate system with “straightened magnetic field lines”, assuming that the magnetic axis is a closed spatial curve with given curvature and torsion. The cross sections of the magnetic surfaces are approximated by ellipses with both elongation and orientation of the main axes varying along the magnetic axis. Effects of triangularity and displacement of magnetic surfaces with respect to the magnetic axis are included in the analysis. Transition from the working coordinates to Boozer ones is carried out, and the metric coefficients are obtained in Boozer coordinates.