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Generating Stellarator fields using complex hypersphere coordinates[1] KIRSTIN KOEPNICK, Bates College, CHRIS SMIET, Princeton Plasma Physics Laboratory , BEN ISRAELI, Princeton University — Magnetic fields for plasma confinement are divergence free vector fields that lie on a foliation of nested toroidal surfaces. We show how to generate a wide class of such fields using the stereographically projected complex coordinates on the hypersphere, S^3. The configurations included knotted and twisted fields. However, these fields originally derived to generate solutions to Maxwells equations, can still carry current and are therefore not suitable as stellarator fields. We explore different analytical methods to adapt these fields to generate current-free (or parallel current) configurations.

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