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Analytic and Computational Exploration of Stellarator Coil Optimization JOHN BALL, University of Maryland, College Park; Princeton Plasma Physics Laboratory, STUART HUDSON, Princeton Plasma Physics Laboratory — Designing stellarator coils which meet both physics and engineering constraints remains an important area of stellarator research. In particular coil robustness to manufacturing errors and geometric simplicity has become a critical issue in the design of new experiments. Through a combination of both analytic and numerical methods, we seek to explore the connection between the magnetic axis, quasisymmetric magnetic field, and coil complexity of quasiaxisymmetric stellarator configurations, with a particular eye towards developing a more sophisticated understanding in how coil complexity and robustness is coupled to the magnetic field and axis geometry.

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