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Improving Coil Designs for the HSX Stellarator with FOCUS[1] THOMAS KRUGER, Univ of Wisconsin, Madison, CAOXIANG ZHU, Princeton Plasma Physics Laboratory, AARON BADER, LUQUANT SINGH, DAVID ANDERSON, University of Wisconsin, Madison — We use the FOCUS code to generate improved coil sets for the HSX stellarator. FOCUS produces curves in 3D space to best reproduce a target plasma equilibrium. Unlike similar codes, the curves in FOCUS are not constrained to lie on a user-defined 2D surface. Therefore FOCUS can inherently solve problems such as determining the optimum coil-plasma distance for a given equilibrium. By adjusting the relative weights between a) the match to the plasma boundary, and b) the average coil length. We present the results from FOCUS where we attempt to improve the coil set by moving coils further away to reduce coil ripple, decreasing the number of coils to improve accessibility, and better matching the target plasma surface. We also present results of alternative coil designs with helical and saddle coils.

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