Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Recent Advances in Stellarator Optimization[1] DAVID GATES, T. BROWN, J. BRESLAU, Princeton Plasma Physics Laboratory, M. LANDREMAN, University of Maryland, S. A. LAZERSON, H. MYNICK, G. H. NEILSON, N. POMPHREY, Princeton Plasma Physics Laboratory — Computational optimization has revolutionized the field of stellarator design. To date, optimizations have focused primarily on optimization of neoclassical confinement and ideal MHD stability, although limited optimization of other parameters has also been performed. One criticism that has been levelled at this method of design is the complexity of the resultant field coils. Recently, a new coil optimization code, COILOPT++, was written and included in the STELLOPT suite of codes. The advantage of this method is that it allows the addition of real space constraints on the locations of the coils. As an initial exercise, a constraint that the windings be vertical was placed on large major radius half of the non-planar coils. Further constraints were also imposed that guaranteed that sector blanket modules could be removed from between the coils, enabling a sector maintenance scheme. Results of this exercise will be presented. We have also explored possibilities for generating an experimental database that could check whether the reduction in turbulent transport that is predicted by GENE as a function of local shear would be consistent with experiments. To this end, a series of equilibria that can be made in the now latent QUASAR experiment have been identified.

[1]This work was supported by U.S. DoE Contract DE-AC02-09CH11466

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Date submitted: 15 Jul 2016 Electronic form version 1.4