

Abstract Submitted
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Fast particle optimization of a quasi-axisymmetric stellarator equilibrium¹ ALEXANDRA LEVINESS, DAVID GATES, Princeton Plasma Physics Laboratory, SAMUEL LAZERSON, Max Planck Institute for Plasma Physics, NEIL POMPHREY, CAOXIANG ZHU, Princeton Plasma Physics Laboratory — One challenge of stellarator optimization is the reduction of fast particle losses, whether those fast particles come from neutral beam injection (NBI) or, in the case of a reactor, fusion reactions. In this work, the method developed by Sophia Henneberg [1] (single surface quasi-axisymmetric (QA) optimization at mid-radius) will be used to re-optimize a fixed boundary, 3 period QA stellarator equilibrium for fast particle confinement while maintaining MHD stability and good neoclassical confinement. The original equilibrium used will be a version of the LI383 design scaled to the size and magnetic field strength (0.5 T) of the proposed permanent magnet stellarator SAS [2]. Fast-particle optimization will be performed with the STELLOPT code suite for both NBI and simulated fusion alphas scaled down in energy. 1. S.A. Henneberg et al 2019 Nucl. Fusion 59 026014 2. D. Gates et al 2019, 61st Annual Meeting of the APS Division of Plasma Physics, BP10.00047

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