

Abstract Submitted
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Using 3-D shaping to reduce turbulence drive MORDECHAI RORVIG, CHRIS HEGNA, University of Wisconsin — This work explores how the 3-D magnetic field geometry of a stellarator can be modified to reduce the growth rates of turbulence inducing microinstabilities. Ion temperature gradient (ITG) modes are studied. As has been previously noted, minimizing the “bad curvature” region has a beneficial effect on ITG stability for turbulence reduction [1]. In this work, we consider how other distinct geometric properties like local magnetic shear can be used to further improve the ITG stability. Sequences of MHD equilibrium surfaces are generated using local 3-D equilibrium theory [2], simplifying the calculations. Instability growth rates for a linear ITG mode [3] are numerically calculated and interpreted.

[1] H. E. Mynick, N. Pomphrey, and P. Xanthopoulos, *Physics of Plasmas* 18, 056101 (2011).

[2] C. C. Hegna, *Physics of Plasmas* 7, 3921 (2000).

[3] J. Anderson, T. Rafiq, M. Nadeem, and M. Persson, *Physics of Plasmas* 9, 1629 (2002).

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