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Investigation of gyrokinetic instabilities in stellarator geometry with the GS2 code J.A. BAUMGAERTEL, PPPL, W. DORLAND, University of Maryland, College Park, E. BELLI, General Atomics, D.R. MIKKELSEN, G.W. HAMMETT, PPPL, M.A. BARNES, University of Maryland, College Park — The GS2 gyrokinetic turbulence code has been used to model microinstabilities in flux-tubes in non-axisymmetric geometries such as stellarators. The threshold for various microinstabilities is known to improve with negative magnetic shear and other magnetic field shaping effects. Stellarators can have natural negative magnetic shear, very large local magnetic shear, and have many additional shaping parameters that might be optimized regarding tokamak geometry. The extent to which it might be possible to optimize designs relative to gyrokinetic microinstabilities and turbulence is not yet known. Here we carry out some studies of growth rates and instability thresholds for a sample NCSX quasi-axisymmetric stellarator design. This work is supported by the DOE Fusion Energy Sciences Fellowship, CMPD, and DOE Grant #DE-FC02-04ER54784.

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