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Linear gyrokinetic studies in W7-AS and W7-X stellarators with the GS2 code J.A. BAUMGAERTEL, W. GUTTENFELDER, G.W. HAMMETT, D.R. MIKKELSEN, Princeton Plasma Physics Laboratory, P. XANTHOPOULOS, H. MAASSBERG, J. GEIGER, Y. TURKIN, Max Planck Institute for Plasma Physics, Greifswald, W. DORLAND, University of Maryland, College Park, E. BELLI, General Atomics — The GS2 gyrokinetic code is being used to study microinstabilities and turbulence in non-axisymmetric flux-tube geometries. Non-axisymmetric systems, such as stellarators, have a number of interesting features, like natural reversed magnetic shear and a large number of shaping parameters. These offer possibilities for reducing microturbulence and improving performance. The W7-AS and W7-X designs were partially optimized for neoclassical transport, and significant comparisons have been made between experimental data and neoclassical expectations. However, the turbulent transport has not been studied in detail. We will present initial studies of gyrokinetic instabilities in W7-AS and W7-X equilibria. This work was supported by the SciDAC Center for the Study of Plasma Microturbulence, the DOE Fusion Energy Sciences Fellowship, and Department of Energy Contract DE-AC02-09CH11466.

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