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Global simulations of Ion Temperature Gradient instability with JOREK J. ZIELINSKI, University of Saskatchewan, M. BECOULET, CEA/ IRFM Cadarache, A. SMOLYAKOV, University of Saskatchewan, X. GARBET, CEA/ IRFM Cadarache, G. HUIJSMANS, CEA/ IRFM Cadarache and ITER Organization, P. BEYER, S. BENKADDA, Aix-Marseille University — Ion Temperature Gradient (ITG) turbulence is known as a dominant contributor to anomalous ion energy transport in tokamaks. Here, we report the results of global simulations of ITG modes with the JOREK, which uses Fourier decomposition in the toroidal direction and finite elements in the poloidal plane. The emphasis is on the global equilibrium profile effects (temperature and magnetic shear). Linear and nonlinear simulations have been performed. The linear simulations demonstrate the development of typical asymmetrical ballooning mode structure with an amplitude maximum off the low field side mid-plane. With lower magnetic shear, the ballooning structure is lost and the mode transitions into the narrowly localized (isolated) mode. The radial structure and poloidal composition of Reynolds stress is investigated for these two types of modes. It is shown that the Reynolds stress has significant finite m (poloidal) harmonics that can lead to the generation of the connective cells.

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