Gyrokinetic simulations of fast-particle-driven instabilities in tokamaks

A. Biancalani D. Zarzoso, A. Bottino and Ph. Lauber

Max-Planck Institute for Plasma Physics, 85748 Garching, Germany

Results of numerical simulations and of fast-particle-driven instabilities in tokamak plasmas are presented. The global gyrokinetic codes NEMORB and LIGKA are used. NEMORB is the multispiece-electromagnetic version of the nonlinear global PIC code ORB5. LIGKA is a non-perturbative linear code (allowing the change of the eigenmode structure). In particular results of simulations on Geodesic acoustic modes (GAMs) and EGAMs (energetic-particle-driven GAMs) are presented, and modelling of GAMs and Alfvn modes observed at ASDEX upgrade is shown. Comparison with analytical theory and other codes is also presented.