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Progress in global gyrokinetic simulations of tokamak microturbulences

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Abstract

We report progress on nonlinear global gyrokinetic particle simulations of electrostatic microturbulences in tokamak, specifically, (i) comparisons between global and local simulations for ion temperature gradient (ITG) modes in the gyro-Bohm regime for large device sizes, and (ii) the effects of nonadiabatic electron response on the generation of zonal flows and the ion transport in the ITG-trapped electron mode regime.