

The role of global gyrokinetic simulations in multi-scale transport modeling

Susan Leerink

The complex interaction between micro, meso, and macro-scale transport phenomena is of importance for transport of energy and particles in magnetically confined plasmas. Massively parallelized global gyrokinetic simulations of the coupled Boltzmann-Maxwell system of equations allow for first principle based studies of the interplay between the various scales. The presentation will outline the critical issues for global gyrokinetic simulations. Furthermore the latest development of numerical schemes for the full-f gyrokinetic particle-in-cell code ELMFIRE and experimental validation results are presented.