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Advanced analysis system and user interface for gyrokinetic simulations of microturbulence JEFF LESTZ, University of Washington, SADIK SHAHIDAIN, Princeton High School, STEPHANE ETHIER, WEIXING WANG, Princeton Plasma Physics Laboratory — Fully-global, 5D gyrokinetic simulations of turbulent transport in tokamak devices generate a large amount of time-dependant data that contain a wealth of information about waves, particles, and their self-consistent interactions. To explore these data in spectral space, in both wave numbers and frequencies, the information needs to be written out and analyzed in a post-process stage. This work describes the development of a MATLAB-based system for the extensive analysis of gyrokinetic simulation data, with particular application to the Gyrokinetic Tokamak Simulation code (GTS), which is being used for studying experimental discharges from NSTX, DIIID, and C-MOD. Parallel FORTRAN and C routines are used in some cases to read in the large amount of data and carry out the first stage of post-processing. Advanced MATLAB functions are then used for calculating statistical quantities, correlations, etc. A graphical user interface enhances the user experience and provides advanced plotting capabilities. Examples of microturbulence data analyses are given and discussed.

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