# Characterization of transport dynamics in turbulent simulations in the presence of an externally imposed sheared flow

D.E. Newman[1],R. Sánchez[2], D. Samaddar[1]

[1]Department of Physics, University of Alaska at Fairbanks, Fairbanks, AK 99775-5920, USA

[2]Fusion Energy Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-8071, USA

In this contribution, we will apply several tools imported from the theory of non-Markovian, non-local stochastic processes to the characterization of the transport dynamics in a simple turbulent flow with a superimposed external sheared flow. It is well known that the action of a sheared flow on turbulence reduces, under certain conditions, the effective turbulent transport coefficients (for instance, the eddy diffusivity) via one or several mechanisms, such as the sloshing of eddies by the sheared flow or the decorrelation of transport over scales longer than the characteristic eddy size. Here we investigate whether the effect of the presence of the sheared flow goes beyond the reduction of effective transport coefficients by changing as well the very nature of the transport dynamics. The simulations are carried out with a simple spectral turbulent code in periodic slab geometry, in order to isolate the dynamical effects from complications related to geometry and other aspects. The results from this study may be relevant to the understanding of transport in more complicated situations, such as those encountered in gyrokinetic and fluid tokamak turbulence simulations.

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