

Model Reduction in Plasma Turbulence

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One of the primary goals of turbulence research is the reduction of the problem without losing its key ingredients. In the context of plasma turbulence, most of our physics insight comes from such reduced descriptions, from predator-prey models, to models of L-H transition, or closure based descriptions such as the wave-kinetic equation. Therefore, a detailed understanding of the process of model reduction itself is important. Here we discuss different approaches to obtaining or testing reduced models from fundamental equations as well as from simulation data. It is argued that the optimum approach involves a mixture of classical techniques based on closures and modern approach based on networks.