

Noise in transport models

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Simple dynamical models of transport have been able to capture much of the dynamics of the transport barriers found in many devices. However, these models, which have many similarities with the classic reaction-diffusion equations, have wave like structures that can propagate in certain regimes near transition points. This propagation, while being realistic in a reaction diffusion model, is probably limited in a turbulent plasma due to the turbulent decorrelation. In order to investigate methods for correcting this, noise is added to the system to simulate the intrinsic decorrelations. The wave propagation characteristics are studied as a function of the noise amplitude and compared to similar studies in reaction diffusion systems in which propagation can actually increase as well as decrease in the presence of noise.