Abstract Submitted
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Computing Eigenvalues of Symbolic Kinetic Equation[1] A.B. RECHESTER, INSA, R.B. WHITE, PPPL — Methods of symbolic dynamics provide a novel way of reconstructing the coarse grained phase space dynamics from the analysis of a single turbulent fluctuating variable X(t). Symbolic Kinetic Equation (SKE) described the time evolution of a coarsed grained phase space probability distribution function $P_{\ell,n}$[1,2]. $P_{\ell',n+1} = \sum_{\ell} P_{\ell,n} \times \Gamma(\ell \to \ell')$; Here n = 0,1,2,...,N is a decretized time, index ℓ labels different coarse grained phase space volumes and $\Gamma(\ell \to \ell')$ is the probability of a transition from state ℓ to the state ℓ'. Stationary solution of SKE is called invariant distribution function P_ℓ. It corresponds to the largest eigenvalue $\lambda = 1$. In this paper we are computing the whole spectrum of eigenvalues λ_i of SKE, which describe the approach to the stationary state. We would like to demonstrate that λ_i are invariant of the dynamics, that is they are the same for different fluctuating variables. We are using fluctuating variables $X_i(t)$ generated by analytic model of drift wave turbulence[3] and real tokamak experimental data.

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