
Mean-square random dynamical systems and mean-square dichotomies

Peter Kloeden*¹

¹Huazhong University of Science and Technology (HUST) – Wuhan, China

Abstract

Mean-square random dynamical systems are formulated as nonautonomous dynamical systems on the time-variable state spaces $X_t \subset L_2[\Omega, \mathcal{A}_t, \mathbb{R}^d]$ of nonanticipative mean-square random variables. They are generated by meanfield stochastic differential equations. Many concepts from nonautonomous dynamical systems carry over, e.g.g, a mean-square attractor is a pullback attractor. However, lack of compactness criteria for the spaces $L_2[\Omega, \mathcal{A}_t, \mathbb{R}^d]$ make it difficult to apply the theory of nonautonomous dynamical systems. Mean-square dichotomies are defined for linear meanfield SDE and the corresponding spectrum found and is used to illustrate the bifurcation of a zero solution to a nontrivial mean-square attractor

*Speaker