Seminário de Probabilidade

Long-term integration of stochastic systems driven by small external noises

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Resumo. Often, in various models of real applications, fluctuations affecting the system are small and state-independent. To study the behavior of these systems many times it is needed to integrate over very long time intervals (e.g. when we aim to compute statistical quantities with respect to the invariant law of the system). Unfortunately, in this case, many of the available methods in the literature show explosive behavior or are inefficient. In this talk we develop a technique that allows the construction of efficient integrators with valuable long-term properties for this kind of systems. Their convergence and stability are studied, and computer simulations are carry out to illustrate the practical performance of the proposed integrators and their advantages in comparison with other existing ones.