

Characterization of the Stability of Chains Associated with g -measures

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Abstract

In this talk we introduce a notion of asymptotic stability of a probability kernel, which we call dynamic uniqueness. We say that a kernel exhibits dynamic uniqueness if all the stochastic chains starting from a fixed past coincide on the future tail σ -algebra. We prove that the dynamic uniqueness is generally stronger than the usual notion of uniqueness for g -measures. Our main result shows that dynamic uniqueness is equivalent to the weak- l^2 summability condition on the kernel. This generalizes and strengthens the Johansson-Öberg l^2 criterion for uniqueness of g -measures. Finally, among other things, we prove that the weak- l^2 criterion implies β -mixing of the unique g -measure compatible with a regular kernel improving several results in the literature.