Ornstein-Uhlenbeck and renormalization semigroups

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Abstract

The Ornstein-Uhlenbeck semigroup combines Gaussian diffusion with the flow of a linear vector field. In infinite dimensional settings there can be non-Gaussian invariant measures. This gives a context for one version of the renormalization group. The adjoint of the Ornstein-Uhlenbeck semigroup with respect to an invariant measure need not be an Ornstein-Uhlenbeck semigroup. This adjoint is the appropriate semigroup to analyze the local stability of the invariant measure under the renormalization group.