Fluctuation limits of measure-valued branching processes

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Abstract

A class of generalized Ornstein-Uhlenbeck processes arise as small branching fluctuation limits of measure-valued branching processes around the means of their equilibria. In this talk we first establish such a fluctuation limit theorem in the space of Schwartz distributions. A stronger result is then proved which states that the convergence actually holds in suitable Sobolev spaces. The results show the structures of differentiable and non-differentiable generalized Mehler semigroups.