

1165-60-82

Michael Salins* (msalins@bu.edu), 111 Cummington Mall, Boston, MA 02215. *Existence and uniqueness for the mild solution of the stochastic heat equation with non-Lipschitz drift on an unbounded spatial domain.*

I prove the existence and uniqueness of the mild solution for a nonlinear stochastic heat equation defined on an unbounded spatial domain. The nonlinearity is not assumed to be globally, or even locally, Lipschitz continuous. Instead the nonlinearity is assumed to satisfy a one-sided Lipschitz condition. First, a strengthened version of the Kolmogorov continuity theorem is introduced to prove that the stochastic convolutions of the fundamental solution of the heat equation and a spatially homogeneous noise grow no faster than polynomially. Second, a deterministic mapping that maps the stochastic convolution to the solution of the stochastic heat equation is proven to be Lipschitz continuous on polynomially weighted spaces of continuous functions. These two ingredients enable the formulation of a Picard iteration scheme to prove the existence and uniqueness of the mild solution. (Received January 12, 2021)