

Quadratic Covariations for the Solution to a Stochastic Heat Equation

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Abstract: Let $u(t, x)$ be the solution to a stochastic heat equation

$$\frac{\partial}{\partial t}u = \alpha \frac{\partial^2}{\partial x^2}u + \frac{\partial^2}{\partial t \partial x}X(t, x), \quad t \geq 0, x \in \mathbb{R}$$

with initial condition $u(0, x) \equiv 0$, where X is a time-space white noise. In this paper, we study the generalized quadratic variations of the solution u , and by using the generalized quadratic variations we give two asymptotic unbiased estimators of α and introduce their asymptotic normality.