Publ. Mat. **53** (2009), 3–45

STATISTICAL INFERENCE FOR STOCHASTIC PARABOLIC EQUATIONS: A SPECTRAL APPROACH

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Abstract

A parameter estimation problem is considered for a stochastic parabolic equation driven by additive Gaussian noise that is white in time and space. The estimator is of spectral type and utilizes a finite number of the spatial Fourier coefficients of the solution. The asymptotic properties of the estimator are studied as the number of the Fourier coefficients increases, while the observation time and the noise intensity are fixed. A necessary and sufficient condition for consistency and asymptotic normality of the estimator is derived in terms of the eigenvalues of the operators in the equation, and a detailed proof is provided. Other estimation problems are briefly surveyed.

2000 *Mathematics Subject Classification.* Primary: 60H15, 62F12; Secondary: 60G15, 60G30, 62M05.

Key words. Cylindrical Brownian motion, Ornstein-Uhlenbeck process, singular statistical models.