BOSTON UNIVERSITY STATISTICS
AND PROBABILITY SEMINAR SERIES

Multivariate Partial Differential Equation Describing the Evolution of a Gaussian Process.

Mark Veillette

Department of Mathematics and Statistics,
Boston University

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111 Cummington Street, Boston

Abstract: If X is a Gaussian process, the diffusion equation characterizes its marginal probability density function. How about finite-dimensional distributions? For each n $\geq$ 1, we derive a system of partial differential equations which are satisfied by the probability density function of the vector $(X(t_1), ..., X(t_n))$. We then show that these differential equations determine uniquely the finite-dimensional distributions of Gaussian processes. We also discuss situations where the system can replaced by a single equation, which is either one member of the system, or an aggregate equation obtained by summing all the equations in the system.

For directions and maps, please see *http://math.bu.edu/research/statistics/statseminar.html.*