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BOSTON UNIVERSITY STATISTICS AND PROBABILITY SEMINAR SERIES

An Effective Estimation Approach for Vector Long Memory Time Series with Application to Weather Derivatives Pricing

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Mathematics and Computer Science (MCS) Building, Room 148
111 Cummington Street, Boston

Tea and Cookies at 3:30pm in MCS 153

Abstract: This talk describes a computationally feasible approach for maximum likelihood estimation of parameters based on long realizations from vector autoregressive fractionally integrated moving-average (VARFIMA) processes. VARFIMA models can capture both short-term correlation structure and long-range dependence characteristics of the individual series, as well as interdependence and feedback relationships between the series. Our approach is based on a multivariate preconditioned conjugate gradient (MPCG) algorithm, involving solution of a block-Toeplitz system, and Monte Carlo integration over the process history. An application to pricing financial derivatives related to weather is discussed. This involves as a first step the modeling of univariate and multivariate daily average temperatures at selected measurement sites in the US using the long memory models, paying attention to accommodating some degree of volatility exhibited by such series.

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