

**Courant Institute of Mathematical Sciences**  
Mathematics Colloquium  
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Speaker: **Mike West**, The Arts & Sciences Professor of Statistical Science  
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Title: Bayesian Modeling in Multivariate Time Series: Structure, Sparsity & Computation

This talk will overview some recent developments in stochastic modeling for multivariate time series analysis and forecasting. Among recent developments that aim to scale-up model analyses to increasingly high-dimensional problems are classes of "dynamic graphical models" -- derived from the integration of statistical graphical modelling ideas into traditional dynamic models. Such models can induce data-supported sparsity structure in otherwise unwieldy model parametrisations, with practical as well as statistically desirable results. Much of the motivation for these models has come from financial and economic applications which will provide the context for the talk. I will note key developments and current research areas in stochastic simulation and search methods that are central to Bayesian analyses of such models, and some current theoretical and modeling research questions including novel stationary stochastic process models for covariance matrix processes. Connections to models for high-dimensional spatial and spatio-temporal analysis can also be made, based on utilizing graphical models of matrix-variate data in novel random field models for lattice/grid-based spatial or space-time data.