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**Jonathan R Stroud\*** ([stroud@gwu.edu](mailto:stroud@gwu.edu)). *Sequential Estimation of Dynamic Spatio-Temporal Models.*

Sequential Monte Carlo methods for state-space models have been successfully applied in many problems. However, standard methods like the SIR particle filter and auxiliary particle filter are known to suffer from particle degeneracy in the presence of outliers, high dimensionality and unknown static parameters. In this talk, we propose a new method for sequential estimation of dynamic spatio-temporal models. The method allows for online Bayesian estimation of states and parameters and works well in nonlinear, high-dimensional models. It is based on a combination of ensemble Kalman filter and Gaussian mixture updates. We illustrate the approach using the Lorenz (1996) 40-variable system, and on a space-time pollution monitoring problem in Mexico City. (Received January 19, 2015)