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Computational Mathematics Seminar Series

Efficient Numerical Methods for Nonlinear Filter Problems

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Professor

Johnston Hall 338
March 12, 2013 - 03:30 pm**Abstract:**

The nonlinear filter problem can be classified as an inverse problem of identifying the state of a system with noise perturbation given observations of the system, also perturbed by noises. Traditional numerical simulation methods include unscented Kalman filter and particle filter. In this talk, I will talk about some new efficient construct efficient numerical methods based on forward backward stochastic differential equations and implicit function theory. Numerical experiments will be presented to demonstrate that our methods are more accurate than Kalman filter and more stable than the particle filter.

Speaker's Bio:

Yanzhao Cao received his Ph.D. degree in 1996 from Virginia Tech and held assistant and associate professor positions at Florida A&M University until 2008. He moved to Auburn University in the fall of 2008 and became a full professor in 2011. His current research interests include numerical solutions of partial differential equations modeling flows in poroelasticity media, fast and efficient numerical methods for stochastic partial differential equations. His research has been supported by NSF and AFOSR.

