

The final assignment is concerned with a 20 minute presentation on one of the following papers. Please contact the listserv to make a choice of which paper/text you prefer to present. The presentation will be performed in class and you do not need to hand in any work.

Everyone should have a copy of the original articles by the time the presentation takes place.

The emphasis in the presentation, as is in the class in general, should be practical, rather than derivational: “how is this done”, “where would you apply this”, “what does it deliver”, etc.

1. Markov Chains, Bayesian Statistics, and the Fokker Planck equation (FKE). A simple presentation appears in a variety of books. One of them is Jazwinski, A. H. Stochastic processes and filtering theory 1970. The presentation simply needs to connect Markov chains, transition probabilities, Bayesian posterior estimates, and the connection to the FPE.
2. Ensemble Kalman Filter. See G. Evensen, “The Ensemble Kalman Filter: theoretical formulation and practical implementation,” *Ocean Dynamics*, **53**, pp.343-367.
3. The Path Integral formulation for data assimilation. See my web site for a reprint.
4. Particle Filters. See M. S. Arulampalam, S. Maskell, N. Gordon, T. Clapp “A Tutorial on Particle Filters for Online Nonlinear/Non-Gaussian Bayesian Tracking”, *IEEE Transactions on Signal Processing*, **50**, pp174-188.
5. Tikhonov Regularization