

**STANFORD UNIVERSITY**  
**DEPARTMENT OF STATISTICS**  
**DEPARTMENTAL SEMINAR**

4:15pm, Tuesday, November 6, 2007  
Sequoia Hall Room 200  
(Cookies at 3:45 in 1st Floor Lounge)

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**Collapse of Particle Filters**

It has been widely realized that Monte Carlo methods (approximation via a sample ensemble) may fail in large scale systems. We offer some theoretical insight into this phenomenon in the context of particle filters. In particular we will argue that (in a vanilla situation) collapse, meaning that the estimated posterior distribution concentrates on one point, will occur unless the ensemble size grows super exponentially in the "effective dimension", a concept we will define.