# USC Department of Mathematics

## Probability & Statistics Seminar

3:30 PM, Friday 7.Nov.08
249 Kaprielian Hall
(Refreshments served at 3 PM)

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Stanford University
(Joint work with B. Yakir, The Hebrew University of Jerusalem)

**Detecting the Emergence of a Signal in a Noisy Image**

We study sequential change-point detection when observations form a sequence of independent Gaussian random fields, and the change-point is the time at which a signal of known functional form involving a finite number of unknown parameters appears. We first identify a detection procedure of Shiryayev-Roberts type that is asymptotically minimax up to terms that vanish as the false detection rate converges to zero. We then compare approximations to the Shiryayev-Roberts detection procedure with comparatively simple approximations to CUSUM type procedures. Although the CUSUM type procedures are suboptimal, our numerical studies indicate that they compare favorably to the asymptotically optimal procedures.