

**The University of Chicago**

Department of Statistics

**Seminar**

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**“Filtering for Point Processes and Its Applications”**

**Monday, April 19, 2004 at 4:00 PM**  
**133 Eckhart Hall, 5734 S. University Avenue**

**ABSTRACT**

In neuroscience, it is often necessary to detect neural activity that exhibits certain temporal pattern. This problem can be formulated as detection of patterned clusters of points (“targets”). I will describe an approach to this problem which also applies to detection for continuous-valued signals. Detection is considered classification based on likelihood ratio. Under certain Poisson assumptions on the point processes, the classification is equivalent to linear filtering. I will present results using this approach in neuroscience, such as replayed pattern in spontaneous sleep neuronal activity of the birdsong system. Large deviations involved in this approach will also be discussed.

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