

DEPARTMENT OF STATISTICAL SCIENCES SEMINAR SERIES

SIDNEY SMITH HALL, ROOM SS1083



**THURSDAY, 11 APRIL 2013
AT 3:30PM**

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Tracking Epidemics with Google Flu Trends Data and a State-Space SEIR Model

In this talk we use Google Flu Trends data together with a sequential surveillance model based on the state-space methodology, to track the evolution of an epidemic process over time. We embed a classical mathematical epidemiology model (a susceptible-exposed-infected-recovered (SEIR) model) within the state-space framework, thereby allowing the classic SEIR dynamics to allow changes through time. The implementation of this model is based on a particle filtering algorithm, which learns about the epidemic process sequentially through time, and provides updated estimates of epidemic parameters and states with each new surveillance data point. We show how this approach, in combination with sequential Bayes factors, can serve as an on-line diagnostic tool for influenza pandemic. We take a close look at the Google Flu Trends data describing the spread of flu in the US during 2003-2009.

Light refreshments will be served at 3:10 p.m.