



The University of Chicago
Department of Statistics

Seminar Series

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**Plug and Play Inference
for Stochastic Dynamical Systems**

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110 Eckhart Hall, 5734 S. University Avenue

ABSTRACT

As scientists, we seek mechanistic understanding of phenomena. Stochastic dynamical systems models (AKA state-space models, partially-observed Markov processes) have a central place in this enterprise. Rigorous inference based on such models has traditionally been extremely challenging and most existing methods place severe restrictions on the form of the models that can be entertained. “Plug-and-play” methods, by contrast, achieve freedom from such restrictions by making heavy use of numerical simulation. These methods accelerate scientific progress by allowing one to entertain and compare multiple competing hypotheses. I will point out several of these methods and describe one, Iterated Filtering, in some detail, using ecological examples to show that one can use it to ask and answer questions previously unaddressable. Along the way, I will introduce a software package, pomp, that implements a variety of plug-and-play methods.

For further information and about building access for persons with disabilities, please contact Laura Rigazzi at 773.702.8333 or send email (lrigazzi@galton.uchicago.edu). If you wish to subscribe to our email list, please visit the following web site: <https://lists.uchicago.edu/web/info/statseminars>.