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## **Intractable likelihoods? Inference as easy as ABC...**

### **Abstract:**

In the last few years, particularly in population genetics and epidemiology, there has been a strong demand for statistical analyses based on models where evaluation of the likelihood function is computationally prohibitive. In such circumstances, we consider even a single likelihood evaluation as impossible. As one might imagine, this causes problems in implementing likelihood-based inferential procedures.

Fortunately, approaches have been developed, again primarily in population genetics, which allow us to sidestep the likelihood issue and perform a likelihood-based analysis anyway. In this talk I will describe the proposed solution to the generic problem, and what it means in terms of an approximate Bayesian model. I will illustrate these ideas with reference to a range of applications including tuberculosis epidemiology, the production of clean steels and finance, and demonstrate that life as a statistician is really much simpler if you have a big, fast computer.

### Biography

Scott Sisson completed his PhD in Bayesian methods development at Bristol University, UK under Prof. Peter J. Green. He then worked in the Caribbean developing Bayesian methods for predicting the return periods of extreme rainfall events, for which the region is prone. Scott now works as Senior Lecturer in Statistics at UNSW. His research interests include Bayesian methods development, and Bayesian modelling in the biosciences and the environment. He was awarded the UNSW John Yu Fellowship for his work on Approximate Bayesian Computation, the subject of this evening's presentation.