MACQUARIE UNIVERSITY
STATISTICS DEPARTMENT SEMINAR

Speaker: A/Prof Scott Sisson, School of Mathematics and Statistics, University of New South Wales

Date: Tuesday 7 May 2013, Time 2pm
Venue: E4A523

Title: Techniques for Approximate Bayesian Computation in "high" dimensions

Abstract:
Approximate Bayesian computation (ABC) is a popular technique for fitting of complex Bayesian models when the likelihood function is computationally intractable. In the past 10 years it has received widespread application across many different scientific disciplines. ABC methods are simple to use (they were invented by Biologists), and have gradually increased in efficiency and sophistication as researchers have begun to understand their properties. However ABC methods suffer greatly from the curse of dimensionality -- as the number of model parameters grows, their performance can deteriorate rapidly. This is problematic, as the popularity of ABC means that it is being applied to ever more complex (and higher-dimensional) problems. In this presentation, I will illustrate the practical utility of ABC and its poor performance in "high" dimensions. I will then discuss some useful ways in which standard ABC techniques may be extended into moderate and higher dimensions, demonstrating that there is a strong future for these methods in applied research.