



**Astrophysical Population Emulation and Uncertainty  
Quantification Workshop  
April 3-7, 2017**

**Tutorial:** *An introduction to computer model emulation - issues and advice*

**Speaker:** Derek Bingham

**Abstract:**

There is a long history in the statistics literature of effectively using a Gaussian process emulator to model the output of a complex mathematical model. The use of the Gaussian process itself raises many important questions relating to the exact form of the GP model; which involves choosing a regression function and an appropriate correlation kernel. Additionally, there are important issues around quantifying various sources of uncertainty during the modelling process.

In this talk, I will introduce the basic Gaussian process emulator, discuss the issues around exact form of the model and discuss how Bayesian methods can be used to account for various sources of uncertainty.