

**September 21<sup>st</sup>, 2015**  
**KAP 414**  
**2:00 P.M. – 3:00 P.M.**

**Professor Michael Ludkovski**  
(University of California, Santa Barbara)

**“Kriging Metamodels for Bermudan Option Pricing”**

**Abstract:** I will discuss two new proposals for the numerical solution of optimal stopping problems within the Regression Monte Carlo (RMC) framework of Longstaff and Schwartz. The first is the use of stochastic kriging (Gaussian process) meta-models for fitting the continuation value. Kriging offers a flexible, nonparametric regression model that quantifies fit uncertainty and approximation quality. The second strategy is to investigate the experimental design aspect of RMC, making connections to the Design of Experiments literature. I will describe and compare the performance of space-filling vs. empirical density designs, and advocate the use of batching with replicated simulations at design sites to improve the signal-to-noise ratio. Numerical case studies for valuing Bermudan Puts under a variety of asset dynamics illustrate that our methods are competitive with existing approaches. (Preprint available at [arxiv.org/1509.02179](http://arxiv.org/1509.02179))