DORIN DRIGNEI, Oakland University  
*Sensitivity Analysis of a Dynamical Computer Model for Vehicle Suspension Systems*

The study of natural phenomena is aided by computer (or simulation) models. In order to understand the influence of inputs on outputs in computer models, formal sensitivity analyses are usually carried out. In this talk we present methods for sensitivity analysis in computer models with time series output. In addition, the sensitivity indices discussed will be used to screen out inactive parameters in computer model calibration. The methods will be illustrated with a computer model for the simulation of vehicle suspension systems.

JOSLIN GOH, Simon Fraser University  
*Tuning with Multiple Emulators of Different Fidelities*

Computer codes are used widely to describe physical processes in lieu of physical observations. In some cases, more than one emulator, each with different degrees of fidelity, can be used to explore the physical system. In this work, we combine field observations and model runs from deterministic multi-fidelity emulators to build a predictive model for the real process. The resulting model can be used to perform sensitivity analysis, solve inverse problems and make predictions. The approach is Bayesian and will be illustrated through a simple example, followed by a real application at the Center for Radiative Shock Hydrodynamics.

JASON LOEPPKY, University of British Columbia, Okanagan  
*Quantification of Computer Model Bias*

Computer models to simulate physical phenomena are widely available in engineering and science. Before relying on a computer model, a natural first step is to compare its output with physical data to assess whether the model reliably represents reality. Physical data can also be used to calibrate or tune unknown parameters in the computer model. Calibration is particularly problematic in the presence of systematic discrepancies between the computer model and physical observations. In this talk we investigate and illustrate some of the many trade-offs that can occur between the discrepancies function, the estimated computer model and the error process.