



NSF-Duke-NCSU-UNC

**Joint MUMS Program Transition - SPUQ Workshop**

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**SPEAKER/ABSTRACT**

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*“Clustering Based Gaussian Process Emulation and Calibration of a Stochastic Agent Based Model”*

**Abstract:**

Gaussian process (GP) model is an effective tool for emulating complex computer simulations. Heterogeneous gaussian process (Binois et al, 2017) has been shown to be superior in the presence of input dependent noise as in the case for any stochastic computer simulation. However, all GP models impose a gaussian variability assumption in the emulator. In this talk, we propose a new approach based on heterogeneous GP and a clustering based technique to emulate and hence calibrate a stochastic agent based simulation. The basic idea is to relax the normality assumption by borrowing the standard gaussian mixture model and coupling that with a traditional GP. The study is motivated by with an example taken from the 2015 Ebola challenge workshop which simulated an Ebola epidemic to evaluate methodology.