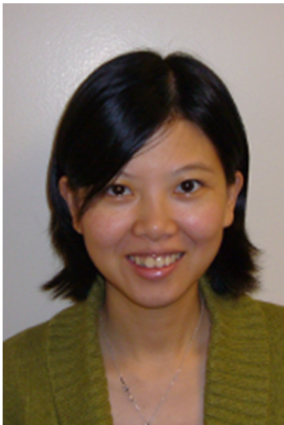


## DEPARTMENT OF STATISTICS AND BIOSTATISTICS

**Ying Hung**

Department of Statistics and Biostatistics  
Rutgers University

*A Generalized Gaussian Process Model for  
Computer Experiments*

**September 13, 2017**

**3:20 – 4:20pm**

Light refreshments will be served

**110 Frelinghuysen Road  
Hill Center, Room 552**

**Abstract:** Conventional analysis for computer experiments is based on Gaussian process (GP) models. Non-Gaussian observations such as binary responses are common in some computer experiments, but the extensions of GP models to these cases have received scant attention in the literature. Motivated by the analysis of a class of cell adhesion experiments, we introduce a generalized Gaussian process model for binary responses, which shares some common features with standard GP models. In addition, the proposed model incorporates a flexible mean function that can capture different types of time series structures. Asymptotic properties of the estimators are derived and their performance is examined via a simulation study. An optimal predictor and its predictive distribution are constructed based on the proposed model. The methodology is applied to study two different cell adhesion mechanisms, which were conducted by computer simulations. The fitted models reveal important biological differences between the two mechanisms in repeated bindings, which cannot be directly observed experimentally.

**Bio** Ying Hung obtained her PhD from Georgia Institute of Technology and is an Associate Professor at Rutgers. Her research interests lie in the fields of experimental design, analysis of computer experiments, and statistical modeling for single molecule experiments.

