



# Colloquium Series Seminar

DATE:

Thursday,  
February 28, 2008

LOCATION:

Kresge Building  
Room G2

TIME:

4:00 pm-5:00 pm

Coffee Reception at  
3:45 pm

**Yuedong Wang, Ph.D.**

Department of Statistics  
and Applied Probability  
University of California - Santa Barbara

*will present a lecture on*

## ***“Nonlinear Nonparametric Regression Models”***

**Abstract:**

Almost all of the current nonparametric regression methods such as smoothing splines, generalized additive models and varying coefficients models assume a linear relationship when nonparametric functions are regarded as parameters. In this talk we present a general class of nonlinear nonparametric models that allow nonparametric functions to act nonlinearly. They arise in many fields as either theoretical or empirical models. We propose new estimation methods based on an extension of the Gauss-Newton method to infinite dimensional spaces and the backfitting procedure. We extend the generalized cross validation and the generalized maximum likelihood methods to estimate smoothing parameters. Connections between nonlinear nonparametric models and nonlinear mixed effects models are established. Approximate Bayesian confidence intervals are derived for inference. We will also present a user friendly R function for fitting these models. The methods will be illustrated using two real data examples.

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