

STANFORD UNIVERSITY
DEPARTMENT OF STATISTICS
DEPARTMENTAL SEMINAR

2:30 p.m., Tuesday, February 22, 2000
Sequoia Hall Rm. 200
(Cookies at 2:15 p.m. in 1st Floor Lounge)

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Analysis of Spectral Data via Wavelets and Functional Linear Model

Spectroscopy is widely used as a tool for chemical identification and concentration calibration. As data collection and detection techniques improve, a fundamental remaining limitation to the speed and reliability with which chemical identification and imaging may be performed is the degree to which spurious interfering signals, including random noise and broadband background emission, can be effectively separated from spectral features of interest. In this talk we present a wavelet procedure for suppressing random noise and broadband background emission and enhancing the useful chemical information content of Raman spectra and spectral images. We also consider the problem of concentration calibration using spectral data. A functional linear model together with a variable selection technique is introduced for predicting chemical concentrations based on observed spectra.