

BI-CO MATHEMATICS COLLOQUIUM

Jennifer Boyko '09
and
Taylor Burmeister '09
Haverford College

*Jennifer Boyko — "The Effect of Missingness
on the Analysis of Alzheimer's Disease Modifying
Drug Clinical Trails"*

*Taylor Burmeister — "Local Edge Detection
with Wavelets"*

Monday, September 8, 2007

Talk at 4:15 p.m. – KINSC H109

Tea at 4:00 p.m. – KINSC H208, Math Lounge

Boyko Abstract: Patients often withdraw from clinical trials for various reasons, including adverse health effects, lack of drug efficacy, and death. This missing data poses a problem for analysis of the data. We performed simulations using idealized data as might be expected from a clinical trial of an Alzheimer's Disease Modifying (ADDM) drug, with varying degrees of standard deviation and missingness. Missingness was generated as Missing Completely at Random (MCAR), Missing at Random (MAR), and Missing Not at Random (MNAR). Analysis of these idealized data sets showed that complete cases (CC) and multiple imputation (MI) are more appropriate for this type of clinical study, yielding higher power and lower bias than last observation carried forward (LOCF). We present recommendations for use of specific methods as a function of the standard deviation, degree of missingness, type of missingness, and other parameters in future clinical trials to optimize data interpretation.

Burmeister Abstract: We will observe some relationships between the continuity of piece-wise continuous functions and their wavelet coefficients. We will compare the effectiveness of wavelets as a method of edge detection with existing methods of edge detection with Fourier series.

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