



MATHEMATICS COLLOQUIUM



SPEAKER: Professor Michael W. Berry, Dept of Electrical Engineering and Computer Science, University of Tennessee, Knoxville

WHEN: October 4, 2007

TIME: 3:40 p.m.

ROOM: Ayres Hall 214

TITLE: Topic Detection and Tracking Using Nonnegative Matrix and Tensor Factorizations

ABSTRACT: Automated approaches for the identification and clustering of semantic features or topics are highly desired for text mining applications. Using a low rank non-negative matrix factorization (NNMF) algorithm to retain natural data non-negativity, we eliminate the need to use subtractive basis vector and encoding calculations present in techniques such as principal

component analysis for semantic feature abstraction. Using non-negative tensor factorization (NNTF), temporal and semantic proximity can be exploited to enable tracking of focused discussions as well as latent (unknown) communication patterns. Demonstrations of NNMF and NNTF algorithms for topic (or discussion) detection and tracking using the Enron Email Collection and documents from the Airline Safety Reporting System (ASRS) are provided.



Refreshments will be served at
3:15 p.m. in Room 119 Ayres