

DREXEL ANALYSIS SEMINAR

April 18, 2014

3-3:50 PM, Korman 245

Speaker: Lei Cao

Title: A normal variation of the problem of A. Horn: the rank 1 case, and the inverse spectral problems for Jacobi and quasi-Jacobi matrices.

Abstract: Given three n -tuples $\{\lambda_i\}_{i=1}^n$, $\{\mu_i\}_{i=1}^n$, $\{\nu_i\}_{i=1}^n$ of complex numbers, we introduce the problem of when there exists a pair of normal matrices A and B such that $\sigma(A) = \{\lambda_i\}_{i=1}^n$, $\sigma(B) = \{\mu_i\}_{i=1}^n$, and $\sigma(A+B) = \{\nu_i\}_{i=1}^n$, where $\sigma(\cdot)$ denotes the spectrum. In the case when $\lambda_k = 0$, $k = 2, \dots, n$, we provide necessary and sufficient conditions for the existence of A and B . In addition, we show that the solution pair (A, B) is unique up to unitary similarity. The necessary and sufficient conditions reduce to the classical A. Horn inequalities when the n -tuples are real.