Name: Paul Reine Kennett L. Dela Rosa, pld43@drexel.edu

Affiliation: Department of Mathematics, Drexel University, USA

Title: Location of Ritz values in the numerical range of normal matrices

Abstract: In 2013, Carden and Hansen proved that fixing $\mu_1 \in W(A) \setminus \partial W(A)$, where $A \in \mathbb{C}^{3\times 3}$ is a normal matrix with noncollinear eigenvalues, determines a unique number $\mu_2 \in W(A)$ so that $\{\mu_1, \mu_2\}$ forms a 2-Ritz set for A. They recognized that μ_2 is the *isogonal conjugate* of μ_1 with respect to the triangle formed by connecting the three eigenvalues of A. In this talk, we consider the analogous problem for a 4-by-4 normal matrix A. In particular, given $\mu_1 \in W(A)$ in the interior of one of the quadrants formed by the diagonals of W(A), we prove that if $\{\mu_1, \mu_2\}$ forms a 2-Ritz set, then μ_2 lies in the convex hull of two eigenvalues of A and the two isogonal conjugates of μ_1 with respect to the two triangles containing μ_1 . We examine how such a result can be used to understand 2-Ritz sets of n-by-n normal matrices.

Co-author(s): Hugo J. Woerdeman (Department of Mathematics, Drexel University, USA).