UNIVERSITY OF RHODE ISLAND

Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Location: Lippitt Hall 204

Time: Thursday, November 2, 2017, 5:00pm

(refreshments at 4:50 p.m.)

Generalized Krylov subspace methods for $\ell_p - \ell_q$ minimization with application to image restoration

by **Prof. Lothar Reichel**

Department of Mathematics, Kent State University

Abstract: This talk presents new efficient approaches for the solution of $\ell_p - \ell_q$ minimization problems based on the application of successive orthogonal projections onto generalized Krylov subspaces of increasing dimension. The subspaces are generated according to the iteratively reweighted least-squares strategy for the approximation of ℓ_p– and ℓ_q–norms or quasi-norms by using weighted ℓ_2–norms. Computed image restoration examples illustrate the performance of the methods discussed.

The talk presents joint work with A. Buccini, G.-X. Huang, A. Lanza, S. Morigi, and F. Sgallari.

Bio-Sketch: Lothar Reichel received a Ph.D. in Numerical Analysis/Computer Science from the University of Stockholm, Sweden, in 1982. He is the Editor-in-Chief of the journal Electronic Transactions on Numerical Analysis, in addition to being an editor of numerous other journals. His research interests are primarily in numerical analysis/scientific computing with emphasis on *ill-posed problems*, *orthogonal polynomials and quadrature with applications in linear algebra and signal and image processing*, *large-scale eigenvalue problems*, *iterative methods for large linear systems of equations*, and *matrix functions with applications to network analysis*.