TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Wednesday, 21 September 2016, 4:00 p.m.
Room 617 Wachman Hall

(refreshments and social at 3:45 p.m)

Block Krylov methods for matrix functions

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Abstract. We prove error bounds for a general class of restarted block Krylov methods for matrix functions with multiple right-hand sides. We focus in particular on methods analogous to the full orthogonalization method (FOM) for linear systems, and therefore refer to these methods as B(FOM)^2: block FOM for functions of matrices. A number of new techniques are developed, including a matrix-valued inner product and norm, which are used to construct and analyze the general block method. We also present numerical experiments illustrating the behavior of important versions of B(FOM)^2 with restarts on practical examples.