

TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and
Scientific Computing Seminar

Room 617 Wachman Hall

Wednesday, 1 March 2006, 4 p.m.

Projection Methods for Approximating
Matrix Functions

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Abstract. In this talk we review Krylov subspace methods for approximating the action of a matrix rational function R , namely $y = R(A)v$, where v is a vector and A is a large dimension matrix. Our analysis is then used to study rational approximation to the matrix exponential operator, $e^A v$. We also show that Krylov subspace approximations are particularly appropriate when geometric properties need be preserved, as is the case for $e^A v$ when A is skew-symmetric and/or Hamiltonian.