UNIVERSITAT POLITÈCNICA DE VALÈNCIA

2012 SIAM Conference on Applied Linear Algebra
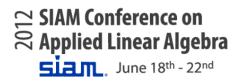siam. June 18th - 22nd

Monday, June 18
Room: Plenary Room

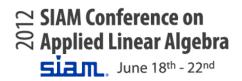| 8:45–9:00		Opening remarks	
9:00–9:45	IP 1	*Challenges in modern medical image reconstruction* Misha E. Kilmer (Chair: Dianne O'Leary)	
10:10–10:55	IP 2	*An envelope for the spectrum of a matrix* Michael Tsatsomeros (Chair: Steve Kirkland)	
11:00–12:40	MS 1	*Recent advances in matrix functions* Organizer: Edvin Deadman and Nicholas J. Higham	
		11:00–11:25	*Computational issues related to the geometric mean of structured matrices* Dario A. Bini
		11:25–11:50	*Efficient, communication-minimizing algorithms for the symmetric eigenvalue decomposition and the singular value decomposition* Yuji Nakatsukasa
		11:50–12:15	*The Padé approximation and the matrix sign function* Krystyna Zietak
		12:15–12:40	*A recursive blocked Schur algorithm for computing the matrix square root* Edvin Deadman
14:10–14:55	IP 3	*An iterative linear algebra perspective on compressed sensing and matrix completion* Jared Tanner (Chair: Rafael Bru)	
15:00–16:40	MS 17	*Markov chains* Organizer: Jeffrey J. Hunter and Stephen J. Kirkland	
		15:00–15:25	*Markov chain properties in terms of column sums of the transition matrix* Jeffrey J. Hunter
		15:25–15:50	*Hamiltonian cycle problem and Markov chains* Jerzy Filar
		15:50–16:15	*Inequalities for functions of transition matrices* Iddo Ben-Ari
		16:15–16:40	*Compartmental systems and computation of their stationary probability vectors* Ivo Marek
17:00–18:40	CP 3	*Matrix factorization*	
		17:00–17:25	*Modified symplectic Gram-Schmidt process is mathematically and numerically equivalent to Householder SR algorithm* Ahmed Salam
		17:25–17:50	*A multi-window approach to deflation in the QR algorithm* Karen Braman
		17:50–18:15	*Aggregation of the compact WY representations generated by the TSQR algorithm* Yusaku Yamamoto
		18:15–18:40	*A generalized SVD for collections of matrices* Charles Van Loan

Universitat Politècnica de València

2012 SIAM Conference on Applied Linear Algebra
siam. June 18th - 22nd

Monday, June 18

Room: 2.8

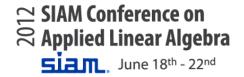| 11:00–12:40 | **MS 5** | *Advances in algebraic multigrid - New approaches and applications* |
		Organizer: Irad Yavneh and Eran Treister
	11:00–11:25	*Algebraic collocation coarse approximation multigrid* Eran Treister
	11:25–11:50	*Energy-minimization interpolation for adaptive algebraic multigrid* Jacob B. Schroder
	11:50–12:15	*Algebraic multigrid (AMG) for complex network calculations* Geoffrey D. Sanders
	12:15–12:40	*The polynomial of best uniform approximation to 1/x as smoother in two grid methods* Ludmil T. Zikatanov
15:00–16:40	**MS 15**	*Application of compressed sensing in Bio-Medicine*
		Organizer: Amir Niknejad
	15:00–15:25	*Evaluation of compressed sensing impact in cardiac signals processing and transmission* Eduardo Pinheiro
	15:25–15:50	*Compressive sensing in drug discovery* Marcus Weber
	15:50–16:15	*Reconstruction of bacterial communities using sparse representation* Or Zuk
	16:15–16:40	*Sensing genome via factorization* Amir Niknejad
17:00–18:40	**CP 2**	*Structured matrices I*
	17:00–17:25	*Determinants and inverses of circulant matrices with Jacobsthal and Jacobsthal-Lucas numbers* Durmus Bozkurt
	17:25–17:50	*Determinants and inverses of circulant matrices with Pell and Pell-Lucas numbers* Fatih Yilmaz
	17:50–18:15	*Eigenproblem for circulant and Hankel matrices in extremal algebra* Hana Tomásková
	18:15–18:40	*Inverses of generalized Hessenberg matrices* Jesús Abderramán Marreno

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

2012 SIAM Conference on Applied Linear Algebra
siam. June 18th - 22nd

Monday, June 18
Room: 2.9

11:00–12:40	MS 6	*Recent advances in fast iterative solvers - Part I of II*
		Organizer: Chen Greif and Alison Ramage
	11:00–11:25	*Challenges in analysis of Krylov subspace methods* Zdenek Strakos
	11:25–11:50	*Updating preconditioners for parameterized systems* Eric de Sturler
	11:50–12:15	*Efficient preconditioning techniques for two-phase flow simulations* Maya Neytcheva
	12:15–12:40	*Preconditioners in liquid crystal modelling* Alison Ramage
15:00–16:40	MS 11	*Recent advances in fast iterative solvers - Part II of II*
		Organizer: Chen Greif and Alison Ramage
	15:00–15:25	*Combination preconditioning of saddle-point systems for positive definiteness* Andy Wathen
	15:25–15:50	*Preconditioned iterative methods for nonsymmetric matrices and nonstandard inner products* Jennifer Pestana
	15:50–16:15	*Multi-preconditioned GMRES* Tyrone Rees
	16:15–16:40	*Bounds on the eigenvalues of indefinite matrices arising from interior-point methods* Chen Greif
17:00–18:40	CP 9	*Eigenvalue problems I*
	17:00–17:25	*Incremental methods for computing extreme singular subspaces* Christopher G. Baker
	17:25–17:50	*An efficient implementation of the shifted subspace iteration method for sparse generalized eigenproblems* Ramaseshan Kannan
	17:50–18:15	*Recursive approximation of the dominant eigenspace of an indefinite matrix* Nicola Mastronardi
	18:15–18:40	*Jacobi-Davidson type methods using a shift invariance property of Krylov subspaces for eigenvalue problems* Takafumi Miyata

Monday, June 18
Room: 2.11

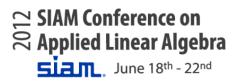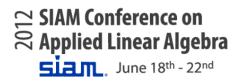|		
11:00–12:40	**MS 9**	*New trends in tridiagonal matrices - Part I of II*
		Organizer: Natália Bebiano
	11:00–11:25	*Direct and inverse problems on pseudo-Jacobi matrices* Natália Bebiano
	11:25–11:50	*Schwartz's matrices and generalized Hurwitz polynomials* Mikhail Tyaglov
	11:50–12:15	*On the Moore-Penrose inverse of singular, symmetric and periodic Jacobi M-matrices* André´s M. Encinas
	12:15–12:40	*The commutant of the tridiagonal pattern* Charles R. Johnson
15:00–16:40	**MS 14**	*New trends in tridiagonal matrices - Part II of II*
		Organizer: Carlos Fonseca
	15:00–15:25	*On generalized Jacobi matrices which are symmetric in Krein spaces* Maxim Derevyagin
	15:25–15:50	*50 On the characteristic function for Jacobi matrices* Pavel Stovícek
	15:50–16:15	*Tridiagonal matrices in comb filters* Jesús Gutiérrez-Gutiérrez
	16:15–16:40	*The nullity theorem: forecasting structures in the inverses of sparse matrices* Raf Vandebril
17:00–18:40	**CP 7**	*Least squares*
	17:00–17:25	*Partially linear modeling combining least squares support vector machines and sparse linear regression* Dries Geebelen
	17:25–17:50	*Construction of test instances with prescribed properties for sparsity problems* Christian Kruschel
	17:50–18:15	*Weighted total least-squares collocation with geodetic applications* Kyle Snow
	18:15–18:40	*Polynomial regression in the Bernstein basis* José-Javier Martínez

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

2012 SIAM Conference on Applied Linear Algebra
siam. June 18th - 22nd

Monday, June 18
Room: 2.12

11:00–12:40	MS 4	*Algorithms on manifolds of low-rank matrices and tensors*
		Organizer: Bart Vandereycken and Pierre-Antoine Absil
	11:00–11:25	*Low rank dynamics for computing extremal points of real and complex pseudospectra* Nicola Guglielmi
	11:25–11:50	*Parametric model order reduction using stabilized consistent interpolation on matrix manifolds* David Amsallem
	11:50–12:15	*Treatment of high-dimensional problems by low-rank manifolds of tensors* Thorsten Rohwedder
	12:15–12:40	*Local convergence of alternating optimization of multivariate functions in the presence of scaling indeterminacies* André Uschmajew
15:00–16:40	MS 10	*Numerical algorithms for switching systems: from theory to applications*
		Organizer: Nicola Guglielmi and Raphaël Jungers
	15:00–15:25	*Observer design for hybrid systems* M. D. Di Benedetto
	15:25–15:50	*About polynomial instability for linear switched systems* P. Mason
	15:50–16:15	*Stability and stabilization of positive switched systems: state of the art and open problems* M.E. Valcher
	16:15–16:40	*The joint spectral radius for semigroups generated by switched differential algebraic equations* F. Wirth
17:00–18:40	CP 5	*Control systems I*
	17:00–17:25	*Structured perturbation of a controllable pair* Inmaculada de Hoyos
	17:25–17:50	*Reduction to miniversal deformations of families of bilinear systems* M. Isabel García-Planas
	17:50–18:15	*Matrix stratifications in control applications* Stefan Johansson
	18:15–18:40	*Stratification of structured pencils and related topics* Andrii Dmytryshyn

11:00–12:40	MS 2	*Methods for Toeplitz matrices and their application* Organizer: Matthias Bolten
	11:00–11:25	*Estimates for the minimum eigenvalue and the condition number of Hermitian (block) Toeplitz matrices* Carlo Garoni NEW TALK
	11:25–11:50	*Fast approximation to the Toeplitz matrix exponential* Hai-Wei Sun
	11:50–12:15	*Matrix algebras sequences can be spectrally equivalent with ill-conditioned Toeplitz ones* Paris Vassalos
	12:15–12:40	*Aggregation-based multigrid methods for Toeplitz matrices* Matthias Bolten
15:00–16:40	MS 16	*Preconditioning of non-normal linear systems arising in scattering problems* Organizer: Kees Vuik and Neil Budko
	15:00–15:25	*Approximate deflation preconditioning methods for penetrable scattering problems* Josef Sifuentes
	15:25–15:50	*Direct approximate factoring of the inverse* Marko Huhtanen
	15:50–16:15	*Regularization of singular integral operators as a preconditioning strategy* Neil Budko
	16:15–16:40	*High-order shifted Laplace preconditioners for wave equations* Xavier Antoine CANCELED
17:00–18:40	CP 6	*Preconditioning I*
	17:00–17:25	*Memory optimization to build a Schur complement* Astrid Casadei
	17:25–17:50	*On generalized inverses in solving two-by-two block linear systems* Radek Kucera
	17:50–18:15	*Sparse direct solver on top of large-scale multicore systems with GPU accelerators* Xavier Lacoste
	18:15–18:40	*New block distributed Schur complement preconditioners for CFD simulation on many-core architectures* Achim Basermann

Monday, June 18
Room: 2.15

11:00–12:40	**MS 8**	*Rational Krylov methods: analysis and applications - Part I of II*
		Organizer: Vladimir Druskin and Stefan Güttel
	11:00–11:25	*Solving Sylvester equations through rational Galerkin projections* Bernhard Beckermann
	11:25–11:50	*Stability-corrected spectral Lanczos decomposition algorithm for wave propagation in unbounded domains* Rob Remis
	11:50–12:15	*Generalized rational Krylov decompositions* Stefan Güttel
	12:15–12:40	*Interpolatory model reduction strategies for nonlinear parametric inversion* Serkan Gugercin
15:00–16:40	**MS 13**	*Rational Krylov methods: analysis and applications - Part II of II*
		Organizer: Vladimir Druskin and Stefan Güttel
	15:00–15:25	*Rational Krylov methods for nonlinear matrix problems* Karl Meerbergen
	15:25–15:50	*Block Gauss and anti-Gauss quadrature rules with application to networks* Lothar Reichel
	15:50–16:15	*On optimality of rational Krylov based low-rank approximations of large-scale matrix equations* Tobias Breiten
	16:15–16:40	*Inverse problems for large-scale dynamical systems in the H2-optimal model reduction framework* Mikhail Zaslavsky
17:00–18:40	**CP 8**	*Miscellaneous I*
	17:00–17:25	*Reduced basis modeling for parametrized systems of Maxwell's equations* Martin Hess
	17:25–17:50	*A new alternative to the tensor product in wavelet construction* Youngmi Hur
	17:50–18:15	*Purely algebraic domain decomposition methods for incompressible Navier-Stokes equation* Pawan Kumar
	18:15–18:40	*On specific stability bounds for linear multiresolution schemes based on biorthogonal wavelets* J.C. Trillo

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

2012 SIAM Conference on Applied Linear Algebra
siam. June 18th - 22nd

Monday, June 18
Room: A

11:00–12:40	**MS 7**	*Application of statistics to numerical linear algebra algorithms - Part I of II*
		Organizer: Marc Baboulin and Haim Avron
	11:00–11:25	*Fast linear system solvers based on randomization techniques* Marc Baboulin
	11:25–11:50	*Numerical issues in randomized algorithms* Ilse Ipsen
	11:50–12:15	*Near-optimal column based matrix reconstruction* Christos Boutsidis
	12:15–12:40	*Numerical experiments with statistical condition estimation* Alan J. Laub
15:00–16:40	**MS 12**	*Application of statistics to numerical linear algebra algorithms - Part II of II*
		Organizer: Marc Baboulin and Haim Avron
	15:00–15:25	*Spectral graph theory, sampling matrix sums, and near-optimal SDD solvers* Ioannis Koutis
	15:25–15:50	*Implementation of a randomization algorithm for dense linear algebra libraries* Dulceneia Becker
	15:50–16:15	*Implementing randomized matrix algorithms in large-scale parallel environments* Michael W. Mahoney
	16:15–16:40	*Random sampling preconditioners* Haim Avron
17:00–18:40	**CP 4**	*Krylov methods*
	17:00–17:25	*Fixed-point Lanczos with analytical variable bounds* Juan L. Jerez
	17:25–17:50	*An Arnoldi-based method for model order reduction of delay system* Yujie Zhang
	17:50–18:15	*The Laurent-Arnoldi process, Laurent interpolation, and an application to the approximation of matrix functions* Carl Jagels
	18:15–18:40	*On worst-case GMRES* Petr Tichý

11:00–12:40	**MS 3**	*Matrix factorizations and applications*
		Organizer: Michael Tsatsomeros and Rafael Cantó
	11:00–11:25	*Classes of matrices with bidiagonal factorization* Álvaro Barreras
	11:25–11:50	*Cholesky factorization for singular matrices* Rafael Cantó
	11:50–12:15	*Applications of the singular value decomposition to perturbation theory of eigenvalues of matrix polynomials* Panayiotis Psarrakos
	12:15–12:40	*On reduced rank nonnegative matrix factorization for symmetric nonnegative matrices* Minerva Catral
17:00–18:40	**CP 1**	*Polinomial equations I*
	17:00–17:25	*Solving multivariate vector polynomial interpolation problems* Clara Mertens
	17:25–17:50	*A general condition number for polynomial evaluation* Sergio Serrano
	17:50–18:15	*The geometry of multivariate polynomial division and elimination* Kim Batselier
	18:15–18:40	*Characterization and construction of classical orthogonal polynomials using a matrix approach* Luis Verde-Star