Householder Symposium XVIII on Numerical Linear Algebra

June 12-17, 2011
Granlibakken Conference Center & Lodge
Tahoe City, California

PROGRAM
Notes

- Location of events.
  - Breakfasts will be served in Granhall.
  - Lunches will be served on Garden Deck.
    - Seating will be assigned randomly.
  - Dinners will be served on Garden Deck, except for the Wednesday banquet, which will be served in Granhall.
  - Plenary sessions will be in the Mountain Ballroom.
  - Concurrent sessions will be in the Mountain, Lake, and Bay Rooms (which are partitions of the Mountain Ballroom).
  - Poster summaries will be delivered in the Mountain Ballroom and poster presentations will be in the Pavilion.

- Chairs of concurrent sessions:
  - For each concurrent session, the last speaker will serve as the session chair.

- Poster sessions:
  - Each poster will be assigned to one side of a poster board. The space available to each poster is 4’ (height) by 8’ (width) (or 1.2m by 2.4m) and will be labeled with the poster presenter’s name. Push pins, velcro, glue, scotch tape, and some large binder clips will be available.
  - Granlibakken will set up the poster boards on Monday morning, so poster presenters will be able to put up their posters anytime from Monday noon onwards.
  - The posters can be left on display during the entire meeting. However, they must be removed by Thursday evening.
  - The poster presentations will be in the Pavilion, which is an outdoor area but under a tent. Thus, it is advisable to have a light jacket or sweater for the evening sessions on Monday and Tuesday.
  - Each of the two poster sessions will begin with a 45-minute poster summary session. Each poster presenter will have an opportunity to give a 1.5-minute summary of his/her poster. The summaries will be presented in the Mountain Ballroom. The summaries will be scheduled in a random order (see the list on the last two pages); 21 presenters will summarize their posters on Monday and 20 will do so on Tuesday. **Please note that the 1.5-minute duration will be strictly enforced.**
  - Each poster presenter may use **ONE** viewgraph during the poster summary session. The one-page viewgraph, as a pdf file, should be sent to EGNg@lbl.gov no later than June 8, 2011, so that all viewgraphs can be put on the same computer. This avoids the need to change computer during the poster summary sessions.

- Free time in the afternoon on Wednesday (June 15, 2011):
  - Outdoor activities, such as hiking and exploring Lake Tahoe, are available. Further information can be obtained from the staff at Granlibakken.
An excursion to the Donner Memorial State Park and the Emerald Bay State Park has been organized. For those that have signed up for the excursion, the chartered buses will pick up the participants from Granlibakken at 1:30pm. It is expected that the buses will return to Granlibakken around 5:30pm. The excursion is oversubscribed; some of the participants who have cars may be asked to drive.
Sunday, June 12, 2011

**Reception** – Granhall (5:30pm – 7:30pm)

**Dinner** – Garden Deck (7:30pm – 9:30pm)
Monday, June 13, 2011

Breakfast – Granhall (7:30am – 9:00am)

Opening Remarks – Mountain Ballroom (8:30am – 9:00am)

Plenary Session 1 – Mountain Ballroom (9:00am – 10:00am)

Chair: Michael L. Overton

9:00am – 9:30am Charles Van Loan
Block Tensor Computation
9:30am – 10:00am Sue Thorne
Preconditioners for PDE-constrained Problems with Nonlinear PDEs in the Constraints

Break (10:00am – 10:30am)

Plenary Session 2 – Mountain Ballroom (10:30am – 12:00pm)

Chair: Ilse Ipsen

10:30am – 11:00am Lars Eldén, ILAS Lecturer
Computing Low-Rank Approximations of Sparse Tensors using Krylov Methods, and Applications in Information Sciences
11:00am – 11:30am Peter Benner
Rational Krylov Subspaces for Nonlinear Model Reduction
11:30am – 12:00pm Andreas Frommer
Computational Proofs of the Stability of Lyapunov Equations

Lunch – Garden Deck (12:00pm – 1:30pm)

Plenary Session 3 – Mountain Ballroom (2:00pm – 3:30pm)

Chair: Volker Mehrmann

2:00pm – 2:30pm Petr Tichý
On Best Approximation by Polynomials of Matrices
2:30pm – 3:00pm Françoise Tisseur
A Reliable Algorithm for the Complete Solution of Quadratic Eigenvalue Problems
3:00pm – 3:30pm  Daniel B. Szyld
Petrov Galerkin View of IDR (and BiCGStab)

Break (3:30pm – 4:00pm)

Concurrent Sessions A (4:00pm – 6:00pm)

Session A1 – Mountain Room

4:00pm – 4:20pm  Iain Duff
Preconditioners based on Strong Components

4:20pm – 4:40pm  Esmond G. Ng
A Combinatorial Problem in Sparse Orthogonal Factorization

4:40pm – 5:00pm  Jianlin Xia
Efficient Structured Solvers and Preconditioners for Large Sparse Linear Systems

5:00pm – 5:20pm  Miro Rozložník
Orthogonalization with a Non-standard Inner Product and Approximate Inverse Preconditioning

5:20pm – 5:40pm  Jennifer Pestana
On Choice of Preconditioner for Minimum Residual Methods for Nonsymmetric Matrices

5:40pm – 6:00pm  Miroslav Tůma
On the Way Towards Robust Algebraic Preconditioners

Session A2 – Lake Room

4:00pm – 4:20pm  Serkan Gugercin
Optimal $H_2$ Points in action: From Model Reduction to Lebesgue Constant

4:20pm – 4:40pm  Athanasios C. Antoulas
Model Reduction of Parameter-Dependent Systems

4:40pm – 5:00pm  Christopher Beattie
Model Reduction of Hamiltonian Systems in Variational Data Assimilation

5:00pm – 5:20pm  Younès Chahlaoui
Gramian Based Model Reduction of Switched Dynamical Systems

5:20pm – 5:40pm  Saifon Chaturantabut
Error Analysis for Nonlinear Model Reduction Using POD-DEIM Technique

5:40pm – 6:00pm  Vladimir Druskin
Optimal Rational Krylov Subspaces for Large-Scale Dynamical Systems
Session A3 – Bay Room

4:00pm – 4:20pm  Mario Arioli  
*Generalized Golub-Kahan Bidiagonalization and Stopping Criteria*

4:20pm – 4:40pm  Xiaobai Sun  
*A Divide and Conquer Method for the SVD of a Banded Matrix*

4:40pm – 5:00pm  Ivo Panayotov  
*Ritz Vectors in the Lanczos Process*

5:00pm – 5:20pm  Ron Morgan  
*A New Approach to Nonsymmetric Lanczos and to Avoiding Breakdown*

5:20pm – 5:40pm  Raf Vandebril  
*The Interplay of Givens Rotations and the QR-factorization in Inversion, Unitary Similarity Transforms and QR-algorithms*

5:40pm – 6:00pm  Fei Xue  
*Efficient Preconditioned Inner Solves for Inexact Rayleigh Quotient Iteration and Their Connections to the Simplified Jacobi-Davidson Method*

Dinner – Garden Deck (6:00pm – 8:00pm)

Poster Session (8:00pm – 10:00pm)

8:00pm – 8:45pm  Poster Summaries – Mountain Ballroom

8:45pm – 10:00pm  Poster Presentation – Pavilion (with dessert & coffee)
Tuesday, June 14, 2011

**Breakfast** – Granhall (7:30am – 9:00am)

**Plenary Session 4** – Mountain Ballroom (8:30am – 10:00am)

Chair: Valeria Simoncini

8:30am – 9:00am Michele Benzi
*Computation of Matrix Functions Arising in Graph Analysis*

9:00am – 9:30am Haim Avron
*Randomized Algorithms in Numerical Linear Algebra: From Theory to Practice*

9:30am – 10:00am Lek-Heng Lim
*Fundamental Difficulties of Numerical Multilinear Algebra*

**Break** (10:00am – 10:30am)

**Plenary Session 5** – Mountain Ballroom (10:30am – 12:00pm)

Chair: Nick Higham

10:30am – 11:00am D. Steven Mackey
*The Quadratic Realizability Problem for Matrix Polynomials*

11:00am – 11:30am Chris Paige
*A Backward Rounding Error Analysis of the Lanczos Process, and its Implications for Other Krylov Subspace Methods*

11:30am – 12:00pm Danny C. Sorensen
*Linear Methods in Nonlinear Model Order Reduction*

**Lunch** – Garden Deck (12:00pm – 1:30pm)

**Concurrent Sessions B** (2:00pm – 4:00pm)

**Session B1** – Mountain Room

2:00pm – 2:20pm Chen Greif
*Towards Block Structure-Preserving Saddle-Point Solvers*

2:20pm – 2:40pm Tyrone Rees
*A Multipreconditioned GMRES Algorithm*
2:40pm – 3:00pm Carl Christian Kjelgaard Mikkelsen
Incomplete Cyclic Reduction for Narrow Banded and Diagonally Dominant Linear Systems

3:00pm – 3:20pm Eric de Sturler
Convergence Bounds for Approximate Invariant Subspace Recycling for Sequences of Linear Systems

3:20pm – 3:40pm Hassane Sadok
A New Approach to GMRES Convergence

3:40pm – 4:00pm Josef Sifuentes
Convergence Theory for a Restarted GMRES Method with Approximate Deflation Preconditioning

Session B2 – Lake Room

2:00pm – 2:20pm Emre Mengi
Nearest Pencils with Specified Eigenvalues

2:20pm – 2:40pm Julio Moro
Directional Perturbation in Structured Eigenproblems

2:40pm – 3:00pm Shreemayee Bora
Moving Eigenvalues with Structured Perturbations, Crawford Number and ε-pseudospectra

3:00pm – 3:20pm Achiya Dax
The Eckart-Young Theorem and Ky Fan’s Maximum Principle: Two Sides of the Same Coin

3:20pm – 3:40pm Po-Ru Loh
A Numerical Linear Algebra View of the Tao-Vu Smallest Singular Value Limit and the SDO Extension

3:40pm – 4:00pm Christopher J. Hillar
Spectral Relaxations of Hard Combinatorial Problems

Session B3 – Bay Room

2:00pm – 2:20pm Awad H. Al-Mohy
An Improved Algorithm for the Matrix Logarithm (cancelled)

2:20pm – 2:40pm Mike A. Botchev
Residual, Restarting and Richardson Iteration for the Matrix Exponential

2:40pm – 3:00pm Anne Greenbaum
Bounds on Norms of Functions of Matrices Using the Field of Values

3:00pm – 3:20pm Alan Edelman
Needle-like Triangles, Matrices and Lewis Carroll

3:20pm – 3:40pm Zdeněk Strakoš
Matching Moments and Matrix Computations

3:40pm – 4:00pm Michael W. Mahoney
Fast Approximation of Matrix Coherence

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Break (4:00pm – 4:30pm)

Concurrent Sessions C (4:30pm – 5:50pm)

Session C1 – Mountain Room

4:30pm – 4:50pm  Tamara G. Kolda
   On the Best Symmetric Rank-k Approximation of a Symmetric Tensor

4:50pm – 5:10pm  Stefan Ragnarsson
   Symmetric Embeddings of Higher-Order Tensors

5:10pm – 5:30pm  Thomas Huckle
   Computations in Quantum Tensor Networks

5:30pm – 5:50pm  Shmuel Friedland
   Theoretical and Numerical Results and Problems in Tensors

Session C2 – Lake Room

4:30pm – 4:50pm  Elisabeth Ullmann
   Iterative Solvers for Stochastic Galerkin Discretizations of the Lognormal Diffusion Problem

4:50pm – 5:10pm  Rüdiger Borsdorf
   Computing a Nearest Correlation Matrix with Factor Structure

5:10pm – 5:30pm  Ilse Ipsen
   Numerical Accuracy and Sensitivity of Monte Carlo Matrix Multiplication

5:30pm – 5:50pm  Federico Poloni
   A Perron Vector-based Iteration for Solving Quadratic Vector Equations

Session C3 – Bay Room

4:30pm – 4:50pm  Bo Kågström
   Efficient and Reliable Algorithms for Challenging Matrix Computations targeting Multicore Architectures and Massive Parallelism

4:50pm – 5:10pm  Lars Karlsson
   Parallel Two-Stage Reduction to Hessenberg Form using Shared Memory

5:10pm – 5:30pm  Nicola Mastronardi
   An Algorithm for Computing and Updating a New Factorization of Large Symmetric Indefinite Matrices

5:30pm – 5:50pm  Jennifer Scott
   The Robust and Efficient Partial Factorization of Dense Symmetric Indefinite Matrices
Dinner – Garden Deck (6:00pm – 8:00pm)

Poster Session (8:00pm – 10:00pm)

8:00pm – 8:45pm Poster Summaries – Mountain Ballroom
8:45pm – 10:00pm Poster Presentation – Pavilion (with dessert & coffee)
**Wednesday, June 15, 2011**

**Breakfast** – Granhall (7:30am – 9:00am)

**Plenary Session 6** – Mountain Ballroom (8:30am – 10:00am)

Chair: Alan Edelman

<table>
<thead>
<tr>
<th>Time</th>
<th>Presenter</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>8:30am</td>
<td>James Demmel</td>
<td>Avoiding Communication in Numerical Linear Algebra</td>
</tr>
<tr>
<td>9:00am</td>
<td>Misha E. Kilmer</td>
<td>Approximations of Third Order Tensors as Sums of (Non-negative) Low-rank Product-Cyclic Tensors</td>
</tr>
<tr>
<td>9:30am</td>
<td>Melina A. Freitag</td>
<td>New Algorithms for Calculating the Distance to Instability and the Distance to a Nearby Defective Matrix</td>
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**Break** (10:00am – 10:30am)

**Concurrent Sessions D** (10:30am – 12:10pm)

**Session D1** – Mountain Room

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<thead>
<tr>
<th>Time</th>
<th>Presenter</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>10:30am</td>
<td>David Chin-lung Fong</td>
<td>LSMR: An Iterative Algorithm for Least-squares Problems</td>
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<tr>
<td>10:50am</td>
<td>Christopher Maes</td>
<td>QPBLUR: A Regularized Active-set Method for Sparse Convex Quadratic Programming</td>
</tr>
<tr>
<td>11:10am</td>
<td>David Titley-Peloquin</td>
<td>Projected Residuals and Backward Error Estimates in LSQR</td>
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<tr>
<td>11:30am</td>
<td>Juan M. Molera</td>
<td>Accurate Solution of Structured Linear Systems and Least Square Problems through Rank Revealing Decompositions</td>
</tr>
<tr>
<td>11:50am</td>
<td>Leslie V. Foster</td>
<td>Reliable Calculation of Numerical Rank, Null Space Bases, Basic Solutions and Pseudoinverse Solutions using SuiteSparseQR</td>
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</table>

**Session D2** – Lake Room

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<thead>
<tr>
<th>Time</th>
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<th>Title</th>
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<tbody>
<tr>
<td>10:30am</td>
<td>Christian Mehl</td>
<td>The Canonical Generalized Polar Decomposition</td>
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</table>
10:50am – 11:10am Yuji Nakatsukasa  
*Optimizing Halley’s Iteration for Computing the Matrix Polar Decomposition*

11:10am – 11:30am David S. Watkins  
*The Next Step in the Never-ending Process of Generalizing Francis’s Implicitly-shifted QR Algorithm*

11:30am – 11:50am Eugene Vecharynski  
*Preconditioned Locally Minimal Residual Method for Computing Interior Eigenpairs of Symmetric Operators*

**Session D3 – Bay Room**

10:30am – 10:50am Fernando de Terán  
*Congruence Orbits of Matrices and Palindromic Pencils, and the Solution of the Equation $XA + AX^T = 0$*

10:50am – 11:10am Niloufer Mackey  
*Möbius Transformations of Matrix Polynomials*

11:10am – 11:30am Alexander Malyshev  
*Low Displacement Rank Representations for the spectral Factorization of Matrix Polynomials*

11:30am – 11:50am Bo Zhang  
*A Fourier-Series-Based Kernel-Independent Fast Multipole Method*

**Lunch – Garden Deck (12:00pm – 1:30pm)**

**Free Time (1:30pm – 6:00pm)**

**Pre-Banquet Reception – Garden Deck (6:00pm – 7:00pm)**

**Banquet – Granhall (7:00pm – 10:00pm)**

There will be a banquet speaker.
Thursday, June 16, 2011

**Breakfast** – Granhall (7:30am – 9:00am)

**Plenary Session 7** – Mountain Ballroom (8:30am – 10:00am)

Chair: Paul Van Dooren

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>8:30am</td>
<td>Mark Embree</td>
<td><em>The Stability of GMRES Convergence with Applications to Inexact Preconditioning</em></td>
</tr>
<tr>
<td>9:00am</td>
<td>Howard C. Elman</td>
<td><em>Linear Algebra Problems Arising from Parameter-Dependent Partial Differential Equations</em></td>
</tr>
<tr>
<td>9:30am</td>
<td>Daniel Kressner</td>
<td><em>Bivariate Matrix Functions</em></td>
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**Break** (10:00am – 10:30am)

**Plenary Session 8** – Mountain Ballroom (10:30am – 12:00pm)

Chair: Andy Wathen

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
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<tbody>
<tr>
<td>10:30am</td>
<td>Stephen A. Vavasis</td>
<td><em>Finding Approximately Rank-one Submatrices with the Nuclear Norm and $\ell_1$-norm</em></td>
</tr>
<tr>
<td>11:00am</td>
<td>Inderjit Dhillon</td>
<td><em>Social Network Analysis: Fast and Memory-Efficient Low-Rank Approximation of Massive Graphs</em></td>
</tr>
<tr>
<td>11:30am</td>
<td>Oliver G. Ernst</td>
<td><em>Krylov Subspace Methods for Geoelectrical Exploration Problems</em></td>
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**Lunch** – Garden Deck (12:00pm – 1:30pm)

**Concurrent Sessions E** (2:00pm – 4:00pm)

**Session E1** – Mountain Room

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<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Topic</th>
</tr>
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<tbody>
<tr>
<td>2:00pm</td>
<td>Martin B. van Gijzen</td>
<td><em>An Elegant IDR(s) Variant that Efficiently Exploits Biorthogonality Properties</em></td>
</tr>
</tbody>
</table>
2:20pm – 2:40pm  Kirk M. Soodhalter  
*The Schur Complement Method for Nearly-Hermitian Linear Systems: An Effective Solver and Preconditioner*

2:40pm – 3:00pm  Xiao-Wen Chang  
*LLL Reduction and Integer Least Squares Problems*

3:00pm – 3:20pm  Suvrit Sra  
*Large-scale Nonnegative Least-Squares*

3:20pm – 3:40pm  Homer F. Walker  
*Anderson Acceleration for Fixed-Point Iterations*

**Session E2 – Lake Room**

2:00pm – 2:20pm  Karl Meerbergen  
*The Solution of a Two-Parameter Eigenvalue Problem and a Connection with the Implicitly Restarted Arnoldi Method*

2:20pm – 2:40pm  Elias Jarlebring  
*Solving Nonlinear Eigenvalue Problems with a Linear Arnoldi Method in a Function Setting and a Characterization of Associated Invariant Pairs*

2:40pm – 3:00pm  Vu Hoang Linh  
*Spectral Intervals for Differential-algebraic Equations and their Numerical Approximation by QR and SVD Algorithms*

3:00pm – 3:20pm  Agnieszka Miedlar  
*Inexact Adaptive Finite Element Methods for PDE Eigenvalue Problems*

3:20pm – 3:40pm  Wim Michiels  
*Linear and Nonlinear Eigenvalue Problems in the Analysis and Robust Control of Time-delay Systems*

3:40pm – 4:00pm  Chun-Hua Guo  
*On a Nonlinear Matrix Equation Arising in Nano Research*

**Session E3 – Bay Room**

2:00pm – 2:20pm  Michael L. Overton  
*Fast Algorithms for the Approximation of the Pseudospectral Abscissa and Pseudospectral Radius of a Matrix*

2:20pm – 2:40pm  Mert Gurbuzbalaban  
*A Fast Algorithm for Approximating the Distance to Instability*

2:40pm – 3:00pm  Alastair Spence  
*A New Algorithm for the Computation of the Real Distance to Instability*

3:00pm – 3:20pm  Froilán M. Dopico  
*Structured Perturbation Theory of Diagonally Dominant Matrices and Numerical Applications*

3:20pm – 3:40pm  David F. Gleich  
*Skew-symmetric Matrix Completion for Ranking*
Break (4:00pm – 4:30pm)

Concurrent Sessions F (4:30pm – 6:10pm)

Session F1 – Mountain Room

4:30pm – 4:50pm  Yogi Ahmad Erlangga
                  *Multilevel Krylov Method for the Biharmonic Equation*

4:50pm – 5:10pm  Jörg Liesen
                  *On the Convergence of GMRES for a Convection-diffusion Model Problem*

5:10pm – 5:30pm  Alison Ramage
                  *Iterative Solution of Linear Systems in Liquid Crystal Modelling*

5:30pm – 5:50pm  Kees Vuik
                  *Recursively Deflated PCG for mechanical problems*

5:50pm – 6:10pm  Mili Shah
                  *Calibrating Robotic Vision Systems*

Session F2 – Lake Room

4:30pm – 4:50pm  Julianne Chung
                  *Windowed Spectral Regularization of Inverse Problems*

4:50pm – 5:10pm  Iveta Hnětynková
                  *The Golub-Kahan Iterative Bidiagonalization in Regularization of Ill-posed problems and Estimation of the Noise in the Data*

5:10pm – 5:30pm  Marielba Rojas
                  *New Methods for Least-Norm Regularization*

5:30pm – 5:50pm  Rosemary Renaut
                  *Recycling Krylov Subspaces for Efficient Schwarz Algorithms with Extensions to Solve Regularized Least Squares Problems*

5:50pm – 6:10pm  Marco Donatelli
                  *Square Smoothing Operators Imposing Accurate Boundary Conditions*

Session F3 – Bay Room

4:30pm – 4:50pm  Grey Ballard
                  *Avoiding Communication using Successive Band Reduction*

4:50pm – 5:10pm  Laura Grigori
                  *CALU: A Communication Optimal LU Factorization Algorithm*
5:10pm – 5:30pm  Ioana Dumitriu  
*Randomized Algorithms for Communication-Optimal SVD and EIG*

5:30pm – 5:50pm  Oded Schwartz  
*Graph Expansion and Communication Costs of Fast Matrix Multiplication*

5:50pm – 6:10pm  Julien Langou  
*A Critical Path Approach to Analyzing Parallelism of Algorithmic Variants*

**Dinner** – Garden Deck (7:00pm – 9:00pm)

**Dance** – Granhall (9:00pm – 12:00am)
Friday, June 17, 2011

**Breakfast** – Granhall (7:30am – 9:00am)

**Plenary Session 9** – Mountain Ballroom (9:00am – 10:00am)
Chair: Zdeněk Strakoš

- 9:00am – 9:30am  David Bindel  
  *A Matrix Factorization for Computer Network Tomography*
- 9:30am – 10:00am  Dianne P. O’Leary  
  *Euclidean Distance Matrix Completion Problems and Protein Structure Determination*

**Break** (10:00am – 10:30am)

**Plenary Session 10** – Mountain Ballroom (10:30am – 12:00pm)
Chair: James Demmel

- 10:30am – 11:00am  Householder Prize Talk

Chair: Esmond G. Ng

- 11:00am – 12:00pm  Forward-Looking Session

**Lunch** – Garden Deck (12:00pm – 1:30pm)
List of Posters

1. Ivan Oseledets – Tensor Train Decomposition and Its Applications
3. Alfredo Buttari – Fine Grained Sparse QR Factorization for Multicore Systems
4. Berkant Savas – Multilinear Rank-$(r_1, r_2, r_3)$ Approximation of a Tensor: Optimality Conditions and Perturbation Theory of Local Optima
5. Pavel Jiránek – A Posteriori Error Estimates Including Algebraic Error and Stopping Criteria for Iterative Solvers
7. Heike Fassbender – Numerical Linear Algebra in POD for Model Order Reduction of Steady Aerodynamic Applications
8. Bruno Iannazzo – A Subspace Shift Technique for Nonsymmetric Algebraic Riccati Equations
9. Sabine Van Huffel – Successful Tensor Decompositions in Clinical Practice
10. Ichitaro Yamazaki – A Parallel Hybrid Linear Solver for Large-scale Highly-indefinite Linear Systems of Equations
15. James Nagy – A Computational Approach for Large Scale Nonlinear Least Squares Problems
17. Stefan Güttel – Towards Black-Box Rational Krylov Methods for $f(A)b$ : Automated Parameter Selection for Markov Functions and Error Estimation
19. Volker Mehrmann – Smooth SVD methods for the Computation of Sacker-Sell Spectra
20. Bart Vandereycken – Riemannian and multilevel optimization for rank-constrained matrix problems

1The title in the program is different from the title in the abstract book.
21. William Kahan – Refining the General Symmetric Eigenproblem
23. Axel Ruhe – Recent Developments of Rational Krylov Algorithms (withdrawn)
24. G.W. Stewart – When Is Twice Enough? (The Oblique Case)
25. Linda Kaufman – Modifications of an Algorithm for Factoring Symmetric Banded Indefinite Matrices
26. Ivan Markovsky – Nonlinearly Structured Low-Rank Approximation with Application to Algebraic Curve Fitting
27. Lijing Lin – A Schur–Padé Algorithm for Fractional Powers of a Matrix
28. Ming Gu – Reduced Rank Regression via Convex Optimization
29. Stefan Johansson – Stratification of Full Normal Rank Polynomial Matrices
31. Xiaoye S. Li – Towards an Optimal Parallel Approximate Sparse Factorization Algorithm Using Hierarchically Semi-separable Structures
32. David Amsallem – Interpolation on Matrix Manifolds of Reduced-Order Models and Application to On-Line Aeroelastic Predictions
34. Paolo Bientinesi – A Modular and Systematic Approach to Stability Analysis
35. Daniel Boley – Commute Times for a Directed Graph using an Asymmetric Laplacian
36. Martin Plešinger – The Total Least Squares Problem with Multiple Right-Hand Sides
37. Ren-Cang Li – Accurate Solutions of M-Matrix Algebraic Riccati Equations
38. Luka Grubišić – Basic Iterative Algorithms of Numerical Linear Algebra as Building Blocks for Hybrid Adaptive Finite Element Methods
40. Zhaojun Bai – Progress in Linear and Nonlinear Eigensolvers
41. Martin H. Gutknecht – Spectral Deflation in Krylov Solvers