

**THE SECOND
INTERNATIONAL
CONFERENCE
ON NUMERICAL ALGEBRA
AND
SCIENTIFIC COMPUTING
(NASC08)**

(<http://lsec.cc.ac.cn/~NASC06/>)

Nanjing Normal University

November 2–5, 2008

NASC is an international conference organized by Chinese Numerical Algebra Group starting from 2006. The conference highlights recent advances in theoretical, computational and practical aspects of linear and nonlinear numerical algebra. The aim of the conference is to gather numerical algebra and scientific computing experts to exchange ideas and discuss future developments and trends of these closely related fields. The topics of NASC08 include, but not limited to: solutions of linear and nonlinear equations; least-squares problems; computations of eigenvalue problems; parallel computations; constructions and analyses of preconditioners; methods and theories of structured matrices; and applications of numerical algebraic techniques and algorithms.

In part, as an important event, the best paper prize for young scientists working on numerical algebra and scientific computing will be awarded during the conference.

CONFERENCE CHAIRS:

Iain S. Duff (Rutherford Appleton Laboratory, UK)

Zhong-Ci Shi (Chinese Academy of Sciences, BEIJING)

SPONSORSHIP:

Academy of Mathematics and Systems Science

Nanjing Normal University

Nanjing University of Aeronautics and Astronautics

National Natural Science Foundation of China

State Key Laboratory of Scientific/Engineering Computing

The Chinese Mathematical Society

The National Natural Science Foundation of China (No. 10525102)

PROGRAM

NOVEMBER 1 (SATURDAY) REGISTRATION and RECEPTION

15:00-17:30 REGISTRATION

Place: The Lobby of The East Building

Nanshan Expert Hotel

Suiyuan Campus, Nanjing Normal University

18:00- RECEPTION DINNER

Place: East Building, Nanshan Expert Hotel

(In Restaurant on the 2nd Floor)

NOVEMBER 2 (SUNDAY)

OPENING CEREMONY AND LECTURES

The 3rd Floor of Main Building of Nanshan Expert Hotel

- 8:30-9:00 **OPENING CEREMONY**
- 9:00-9:15 **PHOTO**
- 9:15-10:35 **INVITED TALKS** Chairperson: **Zhong-Ci Shi**
- 9:15-9:55 **R.H. Chan:** Missing Data Recovery by Tight-frame Algorithms with Flexible Wavelet Shrinkage
- 9:55-10:35 **E.G. Ng:** Improving Sparsity in Sparse Orthogonal Factorizations
- 10:35-10:50 **TEA BREAK**
- 10:50-12:10 **INVITED TALKS** Chairperson: **Raymond H. Chan**
- 10:50-11:30 **H.C. Elman:** Preconditioners for Eigenvalue Problems Arising in Linear Stability Analysis
- 11:30-12:10 **V. Mehrmann:** Numerical Solution of Even/Palindromic Eigenvalue Problems with Applications to Optimal Control of Descriptor Systems
- 12:10-14:00 **LUNCH** (The 2nd Floor, East Building, Nanshan Expert Hotel)
- 14:00-15:40 **CONTRIBUTED TALKS** Chairperson: **Howard C. Elman**
- 14:00-14:25 **H. Dai:** On Smooth LU Decompositions with Applications to Solutions of Nonlinear Eigenvalue Problems
- 14:25-14:50 **X.-Q. Jin:** The Family of Generating Functions with Its Application in Finance
- 14:50-15:15 **K. Chen:** A Multigrid Method for the Solution of the Variational Image Denoising and Deblurring Model
- 15:15-15:40 **Z.-Q. Wang:** On BSGS and MBSGS Preconditioning Methods for Saddle Point Problems
- 15:40-15:50 **TEA BREAK**
- 15:50-17:05 **CONTRIBUTED TALKS** Chairperson: **Maya G. Neytcheva**
- 15:50-16:15 **Z.-Z. Bai:** On HSS-based Iteration Methods for Mildly Nonlinear Systems
- 16:15-16:40 **F.-S. Bai:** Matchings in Bipartite Graphs via Permanent of Matrices
- 16:40-17:05 **M.-S. Wei:** On Growth Factors of Matrix Factorizations
- 17:05-17:20 **TEA BREAK**
- 17:20-18:00 **ANA Prize Session** Chairperson: **Feng-Shan Bai**
- 17:20-17:40 **Candidate A:**
- 17:40-18:00 **Candidate B:**
- 18:30 **DINNER**
Place: East Building, Nanshan Expert Hotel
(In Restaurant on the 2nd Floor)
- 20:00-22:00 **POSTER SESSION**

NOVEMBER 2 (SUNDAY)

EVENING EVENT

20:30- **SELECTION OF APPL. NUMER. ALGEBRA PRIZE**

Place: TBD

Panel Chairs: I.S. Duff, Z.-C. Shi, A.J. Wathen

NOVEMBER 3 (MONDAY)

LECTURES

The 3rd Floor of Main Building of Nanshan Expert Hotel

- 8:30-10:30 INVITED TALKS Chairperson: **Iain S. Duff**
- 8:30-9:10 **A.J. Wathen**: Preconditioning for PDE-constrained Optimization
- 9:10-9:50 **A. Frommer**: Algebraic Multigrid Methods for Shape-optimizing Graph Partitioning
- 9:50-10:30 **K. Hayami**: Convergence of Krylov Subspace Methods for Least Squares Problems
- 10:30-10:45 TEA BREAK
- 10:45-12:05 INVITED TALKS Chairperson: **Andrew J. Wathen**
- 10:45-11:25 **I.S. Duff**: Using FGMRES to Obtain Backward Stability in Mixed Precision
- 11:25-12:05 **F.T. Luk**: An Improved LLL Algorithm
- 12:05-14:00 LUNCH (The 2nd Floor, East Building, Nanshan Expert Hotel)
- 14:00-15:40 CONTRIBUTED TALKS Chairperson: **James G. Nagy**
- 14:00-14:25 **J.-G. Xue**: Exponentials of Essentially Nonnegative Matrices: Entry-wise Perturbation and Accurate Computation
- 14:25-14:50 **Y.-Z. Song**: Preconditioners for Solving Linear Systems with Monotone Coefficient Matrices
- 14:50-15:15 **J.-F. Yin**: Preconditioners Based on Splitting for Nonsymmetric System of Linear Equations
- 15:15-15:40 **E.K. Chu**: On the *-Riccati Equation $XAX^* + XB + CX^* + D = 0$
- 15:40-15:55 TEA BREAK
- 15:55-18:00 CONTRIBUTED TALKS Chairperson: **Andreas Frommer**
- 15:55-16:20 **F.-R. Lin**: BTTB Preconditioners for BTTB Least squares Problems
- 16:20-16:45 **Y.-M. Wei**: Effective Condition Number for Weighted Linear Least Squares Problems and Applications to the Trefftz Methods
- 16:45-17:10 **L.-J. Zhang**: DEFLGMRES(m, l) Method without Complex Arithmetic Operations
- 17:10-17:35 **Z.-Y. Liu**: Hermitian Toeplitz Matrices with Two Prescribed Eigenpairs
- 17:35-18:00 **X.-Z. Zhan**: Extremal Sparsity of the Jordan Canonical Form
- 18:30 BANQUET (INCLUDING ISSUE OF THE PRIZE)
Place: East Building, Nanshan Expert Hotel
(In Restaurant on the 2nd Floor)

NOVEMBER 4 (TUESDAY)

LECTURES

The 3rd Floor of Main Building of Nanshan Expert Hotel

- 8:30-10:30 INVITED TALKS Chairperson: **Franklin T. Luk**
- 8:30-9:10 **M.G. Neytcheva**: Problem-Aware Two-by-Two Block Preconditioners
- 9:10-9:50 **J.G. Nagy**: Efficient Iterative Approach for Large Scale Separable Non-linear Inverse Problems
- 9:50-10:30 **P. Arbenz**: Scalable Matrix-Free μ -Finite Element Analysis of Human Bone Structures
- 10:30-10:45 TEA BREAK
- 10:45-12:05 INVITED TALKS Chairperson: **Esmond G. Ng**
- 10:45-11:25 **W.-W. Lin**: Structured Quadratization and Structure-Preserving Algorithm for Palindromic Polynomial Eigenvalue Problems
- 11:25-12:05 **W. Gander**: Least Squares Problems in Coordinate Metrology
- 12:05-14:00 LUNCH (The 2nd Floor, East Building, Nanshan Expert Hotel)
- 14:00-16:00 INVITED TALKS Chairperson: **Volker Mehrmann**
- 14:00-14:40 **C.-H. Guo**: Iterative Methods for Computing the Principal p -th Root of a Matrix
- 14:40-15:20 **R.G. Bru**: Balanced Incomplete Factorization Based on AISM
- 15:20-16:00 **L.-Q. Qi**: Eigenvalues of Tensors and Application in Biomedical Engineering
- 16:00-16:15 TEA BREAK
- 16:15-17:55 CONTRIBUTED TALKS Chairperson: **Walter Gander**
- 16:15-16:40 **B.-S. He**: Solving a Class of Matrix Minimization Problems by Linear Variational Inequality Approaches
- 16:40-17:05 **Z.-D. Huang**: On a Nonsmooth Newton Method for Obstacle Problem
- 17:05-17:30 **H.-B. An**: On Choosing Nonlinear Initial Iterate for Solving the 2-D 3-T Heat Conduction Equations
- 17:30-17:55 **T.-X. Gu**: A Parallel Version of GPBiCG Method Suitable for Distributed Parallel Computing
- 17:55-18:00 TEA BREAK
- 18:00-18:20 CLOSING CEREMONY Chairperson: **Zhong-Zhi Bai**
- 18:30 DINNER
Place: East Building, Nanshan Expert Hotel
(In Restaurant on the 2nd Floor)

NOVEMBER 5 (WEDNESDAY)

EXCURSION

7:30-17:30 EXCURSION (To Yangzhou City)
7:30 (**EXACT**) Buses Start from the gates of both Hotels:
 Nanshan Expert Hotel and Sunning Universal Hotel
18:00 DINNER
 Place: East Building, Nanshan Expert Hotel
 (In Restaurant on the 2nd Floor)