THE THIRD
INTERNATIONAL
CONFERENCE
ON NUMERICAL ALGEBRA
AND
SCIENTIFIC COMPUTING
(NASC10)

(http://lsec.cc.ac.cn/~NASCNAG/)

Institute of Computational Mathematics
Academy of Mathematics and Systems Science
October 23–27, 2010
NASC is an international conference organized by the 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 NASC10 include, but are not limited to: solutions of linear and nonlinear equations; least-squares problems; computations of eigenvalue problems; tensor decompositions and computations; parallel computations; constructions and analyses of preconditioners; methods and theories of structured matrices; and applications of numerical algebraic techniques and algorithms.

An important event during the conference is the award of the Applied Numerical Algebra (ANA) Prize which is awarded to the two best papers by young Chinese scientists working on numerical algebra and scientific computing.

CONFERENCE CHAIRS:

Martin H. Gutknecht (ETH Zurich, SWITZERLAND)
Zhong-Ci Shi (Chinese Academy of Sciences, CHINA)

SPONSORSHIP:

Academy of Mathematics and Systems Science, CAS
State Key Laboratory of Scientific/Engineering Computing
National Natural Science Foundation of China
National Key Laboratory of Computational Physics
The Computer Network Information Center, CAS
Department of Mathematical Sciences, Tsinghua University
PROGRAM

OCTOBER 22 (FRIDAY)
REGISTRATION and RECEPTION

15:00-17:30  REGISTRATION
Place: The Reception Hall of Motel 168
(Zhong-Guan-Cun Branch)
No. 106, The East Zhong-Guan-Cun Road
Hai-Dian District, Beijing
Tel.: +86-10-82121666

18:00-  RECEPTION DINNER
Place: Jade Palace Hotel
(In Coffeeshop on the 2nd Floor)
No. 76, Zhi-Chun Road, Hai-Dian District, Beijing
Tel.: +86-10-62628888

LECTURE VENUE:  The Conference Hall
Si-Yuan Building
Academy of Mathematics and Systems Science
OCTOBER 23 (SATURDAY)
OPENING CEREMONY AND LECTURES

8:30-9:00 OPENING CEREMONY
9:00-9:30 GROUP PHOTO
9:30-10:50 INVITED TALKS  Chairperson: Zhong-Ci Shi
9:30-10:10 M.H. Gutknecht: Spectral Deflation in Krylov Solvers
10:10-10:50 C. Brezinski: Moments of a Linear Operator on a Hilbert Space with Applications
10:50-11:10 TEA BREAK
11:10-12:00 ANA Prize Session  Chairperson: Lev A. Krukier
11:10-11:35 Candidate A: B. Dong
11:35-12:00 Candidate B: J.-F. Yin
12:00-14:00 LUNCH  (The 4th Floor of Wu-Ke Restaurant)
14:00-15:20 INVITED TALKS  Chairperson: James G. Nagy
14:00-14:40 K. Hayami: Inner-Iteration Preconditioners for Least Squares Problems
15:20-15:40 TEA BREAK
15:40-17:45 CONTRIBUTED TALKS  Chairperson: Ken Hayami
15:40-16:05 J.V. Lambers: Spectral Methods for Time-Dependent Variable-Coefficient PDE Based on Block Gaussian Quadrature
16:05-16:30 Z.-R. Ren: On Sinc Discretization and Banded Preconditioning for Linear Third-Order Ordinary Differential Equations
16:30-16:55 H. Sadok: New Implementation of the Block GMRES Method
16:55-17:20 F.-S. Bai: Preconditioning for the Multi-Homogeneous Homotopy Method
17:20-17:45 M. Mitrouli: On the Sign Changes Property of Sylvester Hadamard Matrices
18:30 DINNER
   Place: Guo-Lin Restaurant, The 2nd Floor
   Add: No. A2, The South Road of Zhong-Guan-Cun
   Tel: 010-62622557
20:30 SELECTION of APPL. NUMER. ALGEBRA PRIZE
   Place: Room 305, Sci./Tech. Complex Building
   Panel Chairs: I.S. Duff, M.H. Gutknecht, Z.-C. Shi
OCTOBER 24 (SUNDAY)

LECTURES

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chairperson</th>
<th>Talks</th>
</tr>
</thead>
</table>
| 8:30-9:50 | INVITED TALKS                   | Martin H. Gutknecht       | **R.H. Chan**: Multilevel Algorithm for a Poisson Noise Removal Model with Total-Variation Regularization  
| 9:10-9:50 |                                |                           | **L.A. Krukier**: Field of Values and Convergence of Skew-Symmetric Iterative Methods |
| 9:50-10:10 | TEA BREAK                       |                           |                                                                      |
| 10:10-11:30 | INVITED TALKS                   | Claude Brezinski          | **A. Spence**: Perturbation Theory for Eigenvalues of Symmetric Matrices with Random Perturbations  
| 10:50-11:30 |                                |                           | **D.B. Szyld**: Algebraic Optimizable Schwarz Methods for the Solution of Banded Linear Systems and PDEs on Irregular Domains |
| 11:40-14:00 | LUNCH (The 4th Floor of Wu-Ke Restaurant) |                           |                                                                      |
| 14:00-15:40 | CONTRIBUTED TALKS               | Alastair Spence           | **T. Kaijser**: A Simple and Robust Method to Find Solutions to Fredholm Integral Equation, First Kind, From Experimental Data  
| 14:50-15:15 |                                |                           | **F.-R. Lin**: The Combination of Modica-Mortola Functional and Total Variation Functional for Fredholm Integral Equations of the First Kind |
| 15:15-15:40 |                                |                           | **M.-S. Wei**: On the Perturbation Bounds of G-Inverses and Oblique Projections |
| 15:40-16:00 | TEA BREAK                       |                           |                                                                      |
| 16:00-17:40 | CONTRIBUTED TALKS               | Apostolos Hadjidimos      | **T.D. Pham**: An Overlapping Additive Schwarz Preconditioner for the Laplace-Beltrami and Hypersingular Integral Equations Using Spherical Splines  
| 16:25-17:40 |                                |                           | **Y.-H. Liu**: Hermitian-Type Singular Value Decomposition with Statistical and Financial Applications  
| 16:50-17:15 |                                |                           | **B.-Y. Li**: A Contribution to the Condition Number of the Scaled Total Least Squares Problem  
| 17:15-17:40 |                                |                           | **G. Wu**: Arnoldi Versus GMRES for Computing PageRank: A Theoretical Contribution to Google’s PageRank Problem |
| 18:30 | BANQUET (INCLUDING ISSUE OF THE PRIZE) |                           |                                                                      |
| Place: Xin-Kai-Yuan Restaurant, The 1st Floor |                           |                           |                                                                      |
| Address: No. 67, The West of the North Forth Ring Road Hai-Dian District, Beijing. Tel: +86-10-82886001 |                           |                           |                                                                      |
| Remark: Buses start from the front of the Conference Hall at 18:00 |                           |                           |                                                                      |
OCTOBER 25 (MONDAY)
LECTURES

8:30-9:50 INVITED TALKS  Chairperson: Raymond H. Chan
8:30-9:10 X.-J. Chen: Minimizing the Condition Number of a Gram Matrix on the Sphere

9:50-10:10 TEA BREAK

10:10-11:30 INVITED TALKS  Chairperson: Daniel B. Szyld
10:10-10:50 M.K. Ng: Total Variation Based Image Restoration and Reconstruction Problems

11:40-14:00 LUNCH  (The 4th Floor of Wu-Ke Restaurant)

14:00-15:40 INVITED MINISYMPOSIUM–A
Chairpersons: Michael K. Ng and Xing-Ping Liu
14:00-14:25 H.-B. An: Multigrid Preconditioned Newton-Krylov Method for Solving the 2-D 3-T Energy Equations
14:25-14:50 C. Mouilleron: Computing Specified Generators of Structured Matrix Inverses
14:50-15:15 H. Xin: Computational Enhancements When Preconditioning Oseen’s Type Problems
15:15-15:40 J.-H. Yun: Parallel Performance of Multisplitting Methods with Preweighting

15:40-16:00 TEA BREAK

16:00-17:40 INVITED MINISYMPOSIUM–B
Chairpersons: Hassane Sadok and Xin-Guo Liu
16:00-16:25 J.-L. Xia: Efficient Structured Preconditioning for Large-Scale Sparse Matrices
16:25-16:50 M. Sedlacek: Smoothing and Regularization with Modified Sparse Approximate Inverse
16:50-17:15 X.-Y. Zuo: An Improved Bi-CGSTAB2 Algorithm Suitable for Distributed Parallel Computing
17:15-17:40 C.-P. Jeannerod: Preconditioned Algorithms for the Exact Solution of Structured Linear Systems

18:00 DINNER
Place: The 4th Floor of Wu-Ke Restaurant
OCTOBER 26 (TUESDAY)
LECTURES

8:30-10:30 INVITED TALKS  Chairperson: Xiao-Jun Chen
8:30-9:10  E.G. Ng: Sparse Matrix Computation in Large-Scale Scientific Applications
9:10-9:50  H. Dai: Model Updating with Symmetric Positive Semi-Definiteness and Connectivity
10:30-10:50 TEA BREAK

10:50-11:40 CONTRIBUTED TALKS  Chairperson: Esmond G. Ng
11:15-11:40  W.-G. Gao: Orbital Minimization with Localization

11:40-14:00 LUNCH  (The 4th Floor of Wu-Ke Restaurant)

14:00-15:40 CONTRIBUTED TALKS  Chairperson: Er-Xiong Jiang
14:00-14:25  K. Jbilou: Block Arnoldi-Based Methods for Large Scale Discrete-Time Algebraic Riccati Equations
14:25-14:50  A. Bouhamidi: Global Krylov Subspace Methods for Computing the Meshless Elastic Polyharmonic Splines
14:50-15:15  Y.-F. Su: Solving Rational Eigenvalue Problems via Linearization
15:15-15:40  T.-X. Li: The Palindromic Generalized Eigenvalue Problem $A^*x = \lambda Ax$: Numerical Solution and Applications
15:40-16:00 TEA BREAK

16:00-17:40 CONTRIBUTED TALKS  Chairperson: Galina V. Muratova
16:00-16:25  G.-D. Gu: HSS Method with a Complex Parameter for the Solution of Complex Linear System
17:15-17:40  X.-H. Shao: Modified Iterative Method for the Augmented System

18:00 DINNER
Place: The 4th Floor of Wu-Ke Restaurant
OCTOBER 27 (WEDNESDAY)

EXCURSION

7:30-16:30 EXCURSION (To Ba-Da-Ling Great Wall and Ming Tombs)

7:30 (EXACT) Buses Start from the gates of both Jade Palace Hotel and Motel 168 (Zhong-Guan-Cun Branch)

18:00 DINNER

Place: The 4th Floor of Wu-Ke Restaurant