THE SIXTH INTERNATIONAL CONFERENCE ON NUMERICAL ALGEBRA AND SCIENTIFIC COMPUTING (NASC 2016)

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

School of Mathematical Sciences
Zhejiang University
Hangzhou, P.R. China
October 22–26, 2016
NASC is an international conference organized by the Chinese numerical algebra group (CNAG), and run by Academy of Mathematics and Systems Science (AMSS), Chinese Academy of Sciences (CAS), 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 NASC 2016 include, but are not limited to: solutions of linear and nonlinear equations; solutions of least-squares problems; structured iterative methods for linear and nonlinear matrix equations; computations of eigenvalue problems; tensor decompositions and computations; parallel computations; constructions and analyses of algebraic and physical-based 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 at most two best papers by young Chinese scientists working on numerical algebra and scientific computing.

**SPONSORSHIP:**

Zhejiang University  
Academy of Mathematics and Systems Science, CAS  
Chinese Academy of Sciences  
Hangzhou Normal University  
National Natural Science Foundation of China  
The Chinese Mathematical Society  
Zhejiang Gongshang University
PROGRAM

OCTOBER 21 (FRIDAY)
REGISTRATION and RECEPTION

15:00-17:30  REGISTRATION
Place: In the Lobby of the Participant’s Living Hotel

- Zhejiang Hotel
  No. 278, San-Tai-Shan Road
  The West Lake District, Hangzhou
  Tel.: +86-571-87180808

- Sunday Sunney Resort
  No. 200, San-Tai-Shan Road
  The West Lake District, Hangzhou
  +86-571-87975888, -87620352, -87620353

18:00-  RECEPTION DINNER
Place: Sunday Sunney Resort
      The Restaurant on The Second Floor

LECTURE VENUES:
October 22–25:  The Osmanthus Room
                 The First Floor of The VIP Building
                 Zhejiang Hotel
OCTOBER 22 (SATURDAY)
OPENING CEREMONY and LECTURES

9:00-9:20 OPENING CEREMONY  Chairperson: Zhong-Zhi Bai
9:20-9:40 GROUP PHOTO
9:40-11:10 INVITED TALKS  Chairperson: Zhong-Ci Shi
  9:40-10:25 L. Eldén: Solving Bilinear Tensor Least Squares Problems
  10:25-11:10 P.S. Vassilevski: Spectral Upscaling for Graph Laplacian Problems

11:10-11:20 TEA BREAK

11:20-12:10 ANA PRIZE SESSION  Chairperson: Hua Dai
  11:45-12:10 Candidate B: J.-L. Zhang: A New Relaxed PSS Preconditioner for Nonsymmetric Saddle Point Problems

12:20-14:00 LUNCH (Lilac Cafe, Zhejiang Hotel)

14:30-16:00 CONTRIBUTED TALKS  Chairperson: Wen-Wei Lin
  14:30-15:00 A. Ramage: Preconditioners in Liquid Crystal Modelling
  15:00-15:30 M. Rozloznik: J-Orthogonal Matrices and Their Sign Patterns
  15:30-16:00 Z.-Q. Wang: Block Alternative Implicit Iteration Methods for Generalized Saddle-Point Problems

16:00-16:20 TEA BREAK

16:20-17:50 CONTRIBUTED TALKS  Chairperson: Miro Rozloznik
  16:50-17:20 T.-M. Huang: Structure-Preserving Methods with Nonequivalence Deflation for a Large Sparse Nonlinear Matrix Equation Arising in Nano Research

17:20-17:50 H.-B. An: Anderson Acceleration and Application to Three Temperature Energy Equations

18:00-20:00 DINNER
  Place: Lilac Cafe, Zhejiang Hotel
  The Second Floor of The Main Building

20:30- SELECTION of APPL. NUMER. ALGEBRA PRIZE
  Place: Sunday Sunney Resort
  The Meeting Room on The Second Floor
  Panel Chairs: I.S. Duff, V. Mehrmann, Z.-C. Shi
OCTOBER 23 (SUNDAY)

LECTURES

9:00-10:30 INVITED TALKS  Chairperson: Iain S. Duff
9:00-9:45 V. Mehrmann: Linear Port-Hamiltonian Systems
9:45-10:30 J.G. Nagy: Iterative Regularization Tools: A MATLAB Package for Large Scale Inverse Problems
10:30-10:40 TEA BREAK
10:40-12:10 INVITED TALKS  Chairperson: Alison Ramage
10:40-11:25 A. Frommer: Analysis of Arnoldi-Type Methods for Computing Matrix Functions
12:20-14:00 LUNCH (Lilac Cafe, Zhejiang Hotel)
14:30-16:00 CONTRIBUTED TALKS  Chairperson: Zeng-Qi Wang
14:30-15:00 I.S. Duff: Sparse Direct Solution on Parallel Computers
15:00-15:30 G. Wu: A New Method for Computing $\phi$-Functions of Large Sparse and Low-Rank Matrices with Applications
15:30-16:00 X.-P. Guo: On the Accelerated Iterative Method for Systems of Nonlinear Equations
16:00-16:20 TEA BREAK
16:20-17:20 CONTRIBUTED TALKS  Chairperson: Jun-Gong Xue
16:20-16:50 Q.-W. Wang: Sylvester-Type Matrix Equations and Simultaneous Decompositions for Some Sets of Matrices

18:30-20:00 CONFERENCE DINNER of NASC 2016
(Including Issue of the Prize)

Place: Kun-Lun Vacation Village Hotel
Add: No. 3, Longjing Road, The West Lake District, Hangzhou
Tel: +86-571-87959777
OCTOBER 23 (SUNDAY)
POSTER SESSION

9:00-17:50 POSTER SESSION


Y.-X. Dong: On Generalized PMHSS Iterations for Continuous Sylvester Equations

Y.-F. Ke: A New Alternating Positive Semidefinite Splitting Preconditioner for Saddle Point Problems from Time-Harmonic Eddy Current

L.-D. Liao: A Relaxed Alternating Preconditioner for Nonsymmetric Saddle Point Problems from Steady Navier-Stokes Equations

C.-Q. Miao: A Filtered-Davidson Method for Large Symmetric Eigenvalue Problems

X.-H. Shao: A Modified Preconditioner for Parameterized Inexact Uzawa Method on Indefinite Saddle Point Problems

Y.-J. Xie: An Accelerated Newton Method of High-Order Convergence for Solving a Class of Weakly Nonlinear Complementarity Problems

W.-R. Xu: Procrustes Problems and Inverse Eigenproblems for Multilevel Block $\alpha$-Circulants

X. Yang: On the Stopping Tolerances of the Inner Iteration in Inexact Matrix Splitting Iteration Methods
OCTOBER 24 (MONDAY)
LECTURES

9:00-10:30 INVITED TALKS  Chairperson: Dan-Fu Han
9:00-9:45  F.-S. Bai: Dimensionality Reduction for Big Data
9:45-10:30  J.-F. Yin: Modulus-Based Matrix Splitting Iteration Methods for the Complementarity Problems
10:30-10:40 TEA BREAK
10:40-12:10 CONTRIBUTED TALKS  Chairperson: Bo Yu
10:40-11:10  T.-X. Li: A Symmetric Structure-Preserving QR Algorithm for Linear Response Eigenvalue Problems
11:10-11:40  Z.-J. Bai: Semidefinite Inverse Eigenvalue Problems with Prescribed Entries and Partial Eigendata
11:40-12:10  Z.-G. Jia: The Model Updating Problem for Gyroscopic System with No Spill-Over
12:20-14:00 LUNCH (Lilac Cafe, Zhejiang Hotel)
14:30-16:00 CONTRIBUTED TALKS  Chairperson: Eric King-wah Chu
14:30-15:00  B. Yu: FE-ADMM Algorithms for Elliptic Optimal Control Problems
15:00-15:30  R.-P. Wen: A Manifold-Approximating Algorithm for Matrix Completion
15:30-16:00  Y. Cao: Block Triangular Preconditioners Based on Symmetric-Triangular Decomposition for Generalized Saddle Point Problems
16:00-16:20 TEA BREAK
16:20-17:50 CONTRIBUTED TALKS  Chairperson: Yu-Mei Huang
16:50-17:20  Y.-F. Jing: Development on Block Iterative Methods for Linear Systems with Multiple Right-Hand Sides
18:00-20:00 DINNER
Place:  Lilac Cafe, Zhejiang Hotel
         The Second Floor of The Main Building
OCTOBER 24 (MONDAY)
POSTER SESSION

9:00-17:50 POSTER SESSION

Y.-R. Fu: A Modified Optimal Low-Rank Matrix Approximation Algorithm for Toeplitz Matrix Completion

X.-M. Gu: ESTC-Math Test Matrix Library: Linear Systems and Eigenvalue Computations

X.-X. Guo: The Existence Condition and Numerical Methods of the Extremal Solutions for Complex Nonsymmetric Algebraic Riccati Equations

G.-X. Huang: A Half-Quadratic and Generalized Krylov Subspace Based Anisotropic \( l_p \) \( (0 < p < 1) \)-TV Regularization for Image Restoration


H.-D. Wang: On the Construction and the Convergence of APIU-Like and SSOR-Like Methods

A.-B. Xu: Iterative Optimal Solutions for Solvable and Unsolvable Inhomogeneous Linear Matrix Equations of Sylvester and Lyapunov Type


S.-X. Zhu: Computing Log Determinant and Its Derivatives
OCTOBER 25 (TUESDAY)
LECTURES

9:00-10:30 CONTRIBUTED TALKS  Chairperson: Jian-Yu Pan
9:00-9:30 J.-J. Zhang: A Scaled Gradient Method for Polyenergetic X-Ray Computerized Tomography Image Reconstruction with Multi-Material Decomposition
9:30-10:00 A.-L. Yang: Minimum Residual Hermitian and Skew-Hermitian Splitting Iteration Methods for Non-Hermitian Positive Definite Linear Systems
10:00-10:30 N.-M. Zhang: On the Iteration Methods for Solving Singular Linear Systems
10:30-10:40 TEA BREAK
10:40-12:10 CONTRIBUTED TALKS  Chairperson: Qing-Wen Wang
10:40-11:10 B.L. Krukier: On Some Properties of Matrices Obtained by Approximating Stationary Convection-Diffusion-Reaction Equation
12:20-14:00 LUNCH (Lilac Cafe, Zhejiang Hotel)
14:30-15:30 CONTRIBUTED TALKS  Chairperson: Tatiana S. Martynova
14:30-15:00 X.-F. Duan: Numerical Methods for Solving Some Matrix Feasibility Problems
15:00-15:30 Y.-W. Wen: A Semi-Smooth Newton Method for Uniform Noise Removal with $L_\infty$-Norm Constraint
15:30-16:00 CLOSING CEREMONY  Chairperson: Zhong-Zhi Bai
16:20-17:50 ROUND TABLE DISCUSSION IN CHINESE
18:00-20:00 DINNER
Place:  Lilac Cafe, Zhejiang Hotel
         The Second Floor of The Main Building
OCTOBER 26 (WEDNESDAY)
EXCURSION

9:00-17:30 EXCURSION (Self-Serviced and Self-Guided Excursion)

18:00-20:00 DINNER

Place: Lilac Cafe, Zhejiang Hotel
The Second Floor of The Main Building
BRIEF HISTORY OF NASC:

NASC 2006: AMSS, Beijing, October 22–25  
Co-Chairs: Raymond H. Chan and Zhong-Ci Shi  
Special Issue: Journal of Computational and Applied Mathematics, 226:1(2009)  
Special Issue Editors: Zhong-Zhi Bai, Lothar Reichel and Zhong-Ci Shi

NASC 2008: Nanjing Normal University, Nanjing, November 2-5  
Co-Chairs: Iain S. Duff and Zhong-Ci Shi  
Special Issue: Linear Algebra and Its Applications, 434:1(2011)  
Special Issue Editors: Zhong-Zhi Bai, Michele Benzi, Iain S. Duff, Andreas Frommer and Zhong-Ci Shi

NASC 2010: AMSS, Beijing, October 23–27  
Co-Chairs: Martin H. Gutknecht and Zhong-Ci Shi  
Special Issue: Numerical Linear Algebra with Applications, 19:6(2012)  
Special Issue Editors: Zhong-Zhi Bai, Iain S. Duff, Lothar Reichel and Zhong-Ci Shi

NASC 2012: Dalian University of Technology, Dalian, October 20–24  
Co-Chairs: Lev A. Krukier and Zhong-Ci Shi  
Special Issue: Journal of Engineering Mathematics, 89:1(2014)  
Special Issue Editors: Zhong-Zhi Bai and Iain S. Duff

NASC 2014: Tongji University, Shanghai, October 25–29  
Special Issue: BIT Numerical Mathematics, 56:2(2016)  
Special Issue Editors: Zhong-Zhi Bai and Lothar Reichel

NASC 2016: Zhejiang University, Hangzhou, October 22–26  
Special Issue: Numerical Linear Algebra with Applications, vol:no(2017)  
Special Issue Editors: Zhong-Zhi Bai, Maya G. Neytcheva and Lothar Reichel

BRIEF HISTORY OF ANA PRIZE WINNERS:

NASC 2006: Heng-Bin An  
NASC 2008: Zheng-Jian Bai  
NASC 2010: Jun-Feng Yin  
NASC 2012: Bo Dong and Lei-Hong Zhang  
NASC 2014: Yang Cao and Chang-Li Liu
BRIEF HISTORY OF ANA PRIZE COMMITTEE:

NASC 2006
Advisory Board: Iain S. Duff  Gene H. Golub  Zhong-Ci Shi
Members:
Feng-Shan Bai  Zhao-Jun Bai  Hua Dai  Iain S. Duff
Gene H. Golub  Martin H. Gutknecht  Ken Hayami  Lev A. Krukier
Tian-Gang Lei  Xing-Ping Liu  Wen Li  Lin-Zhang Lu
Shu-Fang Xu  Zhong-Ci Shi  Yang-Feng Su

NASC 2008
Advisory Board: Iain S. Duff  Zhong-Ci Shi  Andrew J. Wathen
Members:
Zhong-Zhi Bai  Iain S. Duff  Ken Hayami  Volker Mehrmann
Zhong-Ci Shi  Yong-Zhong Song  Andrew J. Wathen

NASC 2010
Advisory Board: Iain S. Duff  Martin H. Gutknecht  Zhong-Ci Shi
Members:
Raymond H. Chan  Iain S. Duff  Martin H. Gutknecht  Er-Xiong Jiang
Lev A. Krukier  Lothar Reichel  Zhong-Ci Shi  Yong-Zhong Song
Andrew J. Wathen

NASC 2012
Advisory Board: Iain S. Duff  Lev A. Krukier  Zhong-Ci Shi
Members:
Hua Dai  Iain S. Duff  Ken Hayami  Lev A. Krukier
Maya G. Neytcheva  Lothar Reichel  Zhong-Ci Shi

NASC 2014
Advisory Board: Ilse C.F. Ipsen  Lothar Reichel  Zhong-Ci Shi
Members:
Zhong-Zhi Bai  Hua Dai  Ken Hayami  Ilse C.F. Ipsen
Galina V. Muratova  Maya G. Neytcheva  Alison Ramage  Lothar Reichel
Miro Rozloznik  Zhong-Ci Shi  Kees Vuik

NASC 2016
Advisory Board: Iain S. Duff  Volker Mehrmann  Zhong-Ci Shi
**Members:**

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<th>Hua Dai</th>
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