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Editorial Preface: "Advances in numerical algebra and scientific computing"

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The Fifth International Conference on Numerical Algebra and Scientific Computing (NASC 2014) was held in Shanghai on October 25–29, 2014. More than 180 participants attended the conference coming from many countries, including Austria, Canada, China, Czech Republic, France, Japan, Russia, Sweden, Switzerland, The Netherlands, United Kingdom and USA. There were 10 invited keynote speakers, 29 contributed talks, and 10 poster presentations. This issue of BIT Numerical Mathematics contains carefully selected and refereed papers by participants who delivered oral and poster presentations at the conference.

The papers discuss the HSS iteration method and its generalizations for the solution of large sparse non-Hermitian positive definite systems of linear equations [8], iterative methods and preconditioning techniques based on matrix splittings for large sparse saddle-point problems [2,3,5–7,9,11], the iterated Tikhonov regularization method for the solution of large-scale Tikhonov minimization problems [4], rigorous convergence analysis of alternating variable minimization with multiplier methods for quadratic programming problems with equality constraints [1], and modeling the interaction of flow and molecular orientation in a complex fluid of nematic liquid crystals [10].

The topics covered at NASC 2014 include direct and iterative methods for systems of linear and nonlinear equations; preconditioning and Krylov subspace iter-

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ative methods for saddle-point problems, least-squares problems, structured block linear systems, constrained over- or under-determined linear systems; modulus-based matrix splitting and multisplitting iteration methods for linear and nonlinear complementarity problems; multigrid and domain decomposition methods for discretized Navier–Stokes equations; inner-outer and two-stage iteration methods for systems of linear equations and complementarity problems; alternating matrix splitting iterations; fast computational methods for nonsymmetric and inverse eigenvalue problems; vector and matrix extrapolation methods; randomized matrix methods; rational Krylov methods for approximating matrix functions; and their applications to generalized Sylvester equations, optimal control problems, transmission eigenvalue problems, high-dimensionality reduction, image deblurring and reconstruction, and time-harmonic eddy current models. Parallel and GPU computing were also discussed. The talks and the papers in this volume demonstrate the diversity of research in numerical algebra.

The conference was organized by the Chinese Academy of Sciences and supported by Tongji University. Members of the organizing committee from Tongji University were in charge of the local organization. The organizing committee consisted of Zhong-Zhi Bai from *Academy of Mathematics and Systems Science* (AMSS), Chinese Academy of Sciences, Beijing; Bao-Jun Bian, Cheng-Long Xu, and Jun-Feng Yin from Tongji University, Shanghai; Jian-Yu Pan from East China Normal University, Shanghai; and Zeng-Qi Wang from Shanghai Jiaotong University, Shanghai.

We would also like to take this opportunity to thank the sponsors of the conference: AMSS of the Chinese Academy of Sciences, the Chinese Academy of Sciences, Tongji University, and the National Natural Science Foundation of China. Our special thanks go to Ms. Min Wei and Mr. Cun-Qiang Miao, both from AMSS, Prof. Jun-Feng Yin, and others for their enthusiastic support of this conference and their help with the organization.

NASC is a series of international conferences organized by AMSS, Chinese Academy of Sciences, and run by the *Chinese Numerical Algebra Group* (CNAG), with the first meeting in 2006. This conference series highlights recent advances in theoretical, computational, and practical aspects of linear and nonlinear numerical algebra. Previous conferences in the NASC series were held at AMSS in Beijing (NASC 2006), Nanjing Normal University (NASC 2008), AMSS in Beijing (NASC 2010), and at Dalian University of Technology (NASC 2012).

Finally, we would like to thank Professor Axel Ruhe, the former editor-in-chief for BIT Numerical Mathematics, and Professor Lars Eldén, the current editor-in-chief, of the journal, for agreeing to and helping with the publication of this special issue. We would like to express our sadness about Axel Ruhe's untimely passing on April 4, 2015, and dedicate this special issue to him.

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