Editorial

Axel Ruhe

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Collaborators for volume 50

This most special year, BIT celebrated its 50 year as a leading journal of Numerical Analysis and many of us celebrated in Lund, Sweden, and Humlebæk Denmark, in June. When I, at the end of the year publish the names of all referees, I notice that we never had so many skilled mathematicians to help us. All of you are anonymous to the authors, but here I am happy to say thank you to everyone. You are one of our most valuable resources, working voluntary. Some of you have handled up to ten mss! For each published paper, there are two referees but many, actually a majority, of all manuscripts never make it all the way, but still demand efforts from referees as gatekeepers and also helping authors to get the best out of their contributions.

What also makes me happy is that so many of you are new for us. That there are so many new branches on the family tree, also among the authors. We'll meet again, in our big BIT family!

Referees active Nov. 1 2009–Oct. 31 2010:

Lidia Aceto
Ben Adcock
Alan Andrew
Josep Arnal
Mohammad Asadzadeh

Winfried Auzinger
Uday Banerjee
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J.P. Boyd	Zhongyi Huang
Dietrich Braess	Thomas Huckle
Franco Brezzi	Thorsten Huels
Hermann Brunner	Mohamed E Hussein
Kevin Burrage	Karel In't Hout
Felix Carbonell	Arieh Iserles
Thomas Cashman	Zdzislaw Jackiewicz
Elena Celledoni	Laurent Jay
Yair Censor	Zhongxiao Jia
Wen Chen	Qinian Jin
Moody Chu	Stephen Joe
Julianne Chung	Peter Junghanns
Mark W Coffey	Barbara Kaltenbacher
Ronald Cools	Trygve Klovning Karper
Catterina Dagnino	Jens Keiner
Manuel De la Sen	Carl Christian Kjelgaard Mikkelsen
Vittoria Demichelis	Peter E Kloeden
Venkatesh Deshmukh	Leonid Knizhnerman
Marco Donatelli	Gunilla Kreiss
Serge Dubuc	Daniel Kressner
Sean Eastman	Michal Krizek
Charles M Elliott	Anne Kværnø
Etienne Emmrich	Stephen Langdon
Stefan Engblom	Philippe Langlois
Radek Erban	Stig Larsson
Michael S. Floater	Sven Leyffer
Bengt Fornberg	Dmitriy Leykekhman
Andreas Frommer	Ren-Cang Li
Alan Genz	Weiguo Li
Lars Grasedyck	Fu-rong Lin
Nicola Guglielmi	Wen Wei Lin
Mårten Gulliksson	Torsten Linss
Tom Hagstrom	Anders Logg
Ernst Hairer	Ladislav Luksan
Eskil Hansen	Marko Makela
Ali Ihsan Hascelik	Alexander Malyshev
Shunsuke Hayashi	Giuseppe Mastroianni
Johan Helsing	Robert Mattheij
Holger Heumann	Francesca Mazzia
Desmond J Higham	Robert McLachlan
Adrian T Hill	

David Ian McLaren	Hans Joachim Schroll
Karl Meerbergen	J.D. Seader
Alain Miranville	Stefano Serra Capizzano
Siddhartha Mishra	Fiorella Sgallari
Giovanni Monegato	Zhen-Jun Shi
Serena Morigi	Vasile Sima
James Nagy	Ivan Slapničar
Arnold Neumaier	Marian Slodička
Jennifer Niessner	Inge Söderkvist
Sotirios Notaris	Tanya Sorokina
Günther Nürnberger	Frank Stenger
Sheehan Olver	Andrew Stuart
Alexander Ostermann	Tatjana Stykel
Abani Patra	Weiwei Sun
Bor Plestenjak	Daniel B. Szyld
Liqun Qi	Mechthild Thalhammer
Reinot Quispel	Ian Thompson
Talal Rahman	Lutz Tobiska
Higinio Ramos	Miroslav Tuma
Muruhan Rathinam	Stefan Turek
Sebastian Reich	Gilles Vilmart
Oleg Reichmann	Christof Voemel
Nils Henrik Risebro	Relja Vulcanovic
Christian Rohde	Zhengyu Wang
Marielba Rojas	Tim Warburton
Hans-Goerg Roos	Yoshitaka Watanabe
Andreas Rössler	Renate Winkler
Miroslav Rozloznik	Shuhuang Xiang
Siegfried M. Rump	Xiu Ye
Paul Sablonnière	Lexing Ying
Tomas Sauer	Harry Yserentant
Berkant Savas	Jin-Yun Yuan
Dmitry Savostyanov	Antonella Zanna
Driss Sbibih	Ahmed Zayed
Dominik Schoetzau	Zhimin Zhang
	Yong-Kang Zhu

Introduction to the contents of the issue BIT 50:4

In this issue, we add the following stones to our scientific edifice. In several cases application needs, in others mathematical convergence, and in some implementation aspects, have been the driving force. Let us continue in all these directions!

Hermann Brunner and *Hui Liang* describe a collocation method to solve a delay differential equation where the delay vanishes in the start. They show that, if the

collocation points are chosen to give an A-stable solution to a differential system, the delay system will have the same asymptotic stability.

John Butcher and *Tina Chan* study the tree and forest space used to describe Runge Kutta methods. They show that the forest is an algebra and this gives several different ways of formulating the order conditions. The Runge–Kutta methods are identified with left Riemann sums for a uniform partition of the integration interval for the Picard integral.

Stéphane Descombes and *Mechthild Thälhammer* study exponential operator splitting methods for evolutionary problems and their applications to linear Schrödinger equations in the semi-classical regime. A new local error representation that is suitable for a convergence analysis is derived. It is suitable for cases when the equation contains critical parameters.

Nguyen Hoang describes a dynamical systems method of gradient type for solving nonlinear equations with monotone operators. A new discrepancy principle is used to show when such a method gives convergence to a minimal norm solution.

Michael Holst, *Mats Larson*, *Axel Målqvist*, and *Robert Söderlund* describe a finite element discretization to the Joule heating problem in three space dimensions. They show strong convergence to a weak solution. As an application, the method is used to predict the heating of a part of a MEMS device.

Tobias Jahnke and *Derya Altıntan* describe a stochastic simulation algorithm for a chemical reaction system. The system is subdivided into reaction channels with known probability distributions, that can be followed without tracing each reaction event, and then combined in an alternating fashion. The method is used to describe the spread of viral infections using the MSEIR model.

Jian Li, *Lihua Shen*, and *Zhangxin Chen* describe a stabilized Finite Volume Method for the stationary Navier-Stokes equations. It is based on local Gauss integration and lowest order finite element pairs. Superconvergence between a nonconforming finite element and the finite volume solution is derived. The method is illustrated on a two dimensional example and the results are compared to standard Galerkin.

Paul Sablonnière, *Driss Sbibi*, and *Mohamed Tahrichi* describe a quadrature rule based on a quartic spline interpolant. It is convergent to sixth order and its use in a Nyström method to solve a Fredholm integral equation of the second kind is demonstrated.

Suzanne Schontz and *Stephen Vavasis* study FEMWARP, a method to generate a deformed finite element mesh of a deformed domain in two or three dimensions. It is studied how to prevent the deformation from causing element reversal.

Matthew Stuber, *Vinay Kumar*, and *Paul Barton* compute all real solutions in a bounded domain of a system of nonlinear equations. It is reformulated as a global optimization and is treated with a branch and bound algorithm based on a nonsmooth exclusion test, followed by local Newton iterations. Several variants of the algorithm are tested on a set of 31 test examples from the literature.

A pleasant and beneficial read wishes you,

Axel Ruhe