

# COMPUTATIONAL METHODS IN APPLIED MATHEMATICS

## HONORARY EDITOR

*Vidar Thomée, Göteborg, Sweden*

## EDITOR-IN-CHIEF

*Carsten Carstensen, Berlin, Germany and Seoul, Korea*

## MANAGING EDITOR

*Piotr Matus, Minsk, Belarus*

## EXECUTIVE SECRETARY

*Almas Sherbaf, Minsk, Belarus*

## EDITORS

*Ivan Gavrilyuk, Eisenach, Germany*

*Ulrich Langer, Linz, Austria*

*Petr Vabishchevich, Moscow, Russia*

## ASSOCIATE EDITORS

*Michele Benzi, Atlanta, USA*

*Raimondas Ciegis, Vilnius, Lithuania*

*Zdeněk Dostál, Ostrava, Czech Republic*

*Maksymilian Dryja, Warsaw, Poland*

*Etienne Emmrich, Berlin, Germany*

*Neville J. Ford, Chester, UK*

*Piet W. Hemker, Amsterdam, Netherlands*

*Bosko Jovanovic, Belgrade, Serbia*

*Raytcho Lazarov, College Station, USA*

*Volodymyr L. Makarov, Kyiv, Ukraine*

*Maxim A. Olshanskii, Houston, USA*

*Sergei V. Pereverzev, Linz, Austria*

*Andreas Prohl, Tübingen, Germany*

*Sergey I. Repin, St.Petersburg, Russia*

*Ian H. Sloan, Sydney, Australia*

*Martin Stynes, Cork, Ireland*

*Endre Süli, Oxford, UK*

*Eitan Tadmor, College Park, USA*

*Lutz Tobiska, Magdeburg, Germany*

*Alexander Zlotnik, Moscow, Russia*

**DE GRUYTER**

The highly selective international mathematical journal Computational Methods in Applied Mathematics (CMAM) considers original mathematical contributions to computational methods and numerical analysis with applications mainly related to PDEs.

CMAM seeks to be interdisciplinary while retaining the common thread of numerical analysis, it is intended to be readily readable and meant for a wide circle of researchers in applied mathematics.

The humanistic aspect of the journal is the joining of efforts of both Eastern and Western scientists in the field of numerical analysis. The journal is supposed to play an active role in this matter. The Editorial Board staff of the journal and all published papers abundantly evidences it.

ISSN 1609-4840 · e-ISSN 1609-9389

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at [www.degruyter.com/view/j/cmam](http://www.degruyter.com/view/j/cmam).

**RESPONSIBLE EDITOR** Piotr Matus, Institute of Mathematics NAS of Belarus, 11 Surganov Str. 220072 Minsk Belarus.  
Department of Mathematics The John Paul II Catholic University of Lublin, Al. Raclawickie 14, 20-950 Lublin Poland.  
Email: [matus@im.bas-net.by](mailto:matus@im.bas-net.by)

**JOURNAL MANAGER** Theresa Haney, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany.  
Tel.: +49 (0)30 260 05-375, Fax: +49 (0)30 260 05-250  
Email: [theresa.haney@degruyter.com](mailto:theresa.haney@degruyter.com)

**RESPONSIBLE FOR ADVERTISEMENTS** Panagiota Herbrand, De Gruyter, Mies-van-der-Rohe-Straße 1, 80807 München, Germany.  
Tel.: +49 (0)89 769 02 – 394, Fax: +49 (0)89 769 02 – 350  
Email: [panagiota.herbrand@degruyter.com](mailto:panagiota.herbrand@degruyter.com)

© 2013 Walter de Gruyter GmbH, Berlin/Boston

**PRINTING** Franz X. Stückle Druck und Verlag e.K., Ettenheim

Printed in Germany

**COVER ILLUSTRATION** © Pasieka/SPL/Agentur Focus



## Contents

P. Chatzipantelidis, R. D. Lazarov, V. Thomée

**Some Error Estimates for the Finite Volume Element Method for a Parabolic Problem — 251**

M. Dobrowolski

**On Finite Difference Schemes for Elliptic Equations with Discontinuous Coefficients — 281**

P. Dörsek, J. M. Melenk

**Symmetry-Free,  $p$ -Robust Equilibrated Error Indication for the  $hp$ -Version of the FEM in Nearly Incompressible Linear Elasticity — 291**

M. Aurada, M. Feischl, T. Führer, M. Karkulik, D. Praetorius

**Efficiency and Optimality of Some Weighted-Residual Error Estimator for Adaptive 2D Boundary Element Methods — 305**

W. Dörfler, S. Sauter

**A Posteriori Error Estimation for Highly Indefinite Helmholtz Problems — 333**

H. Cao, M. T. Nair

**A Fast Algorithm for Parameter Identification Problems Based on the Multilevel Augmentation Method — 349**

