

RUSSIAN JOURNAL OF NUMERICAL ANALYSIS AND MATHEMATICAL MODELLING

EDITOR-IN-CHIEF

Yuri V. Vassilevski, Moscow

MANAGING EDITOR

Igor N. Konshin, Moscow

EDITORIAL BOARD

Gennady A. Bocharov, Moscow

Nikolay G. Iakovlev, Moscow

Yuri M. Laevsky, Novosibirsk

Yuri M. Nечepurenko, Moscow

Vladimir V. Shaidurov, Krasnoyarsk

Victor P. Shutyaev, Moscow

Vladimir A. Titarev, Moscow

Mikhail A. Tolstykh, Moscow

Eugene E. Tyrtysnikov, Moscow

HONORARY MEMBERS

Valery I. Agoshkov, Moscow

Valentin P. Dymnikov, Moscow

Yuri A. Kuznetsov, Houston/Moscow

Gennady A. Mikhailov, Novosibirsk

Yurii I. Shokin, Novosibirsk

DE GRUYTER

RUSSIAN JOURNAL OF NUMERICAL ANALYSIS AND MATHEMATICAL MODELLING provides English translations of selected new original Russian papers on the theoretical aspects of numerical analysis and the application of mathematical methods to simulation and modelling. The members of the editorial board, the most prominent Russian scientists in numerical analysis and mathematical modelling, select papers on the basis of their high scientific standard, innovative approach and topical interest.

Please see the journal's homepage for Abstracting & Indexing Services information.

ISSN 0927-6467 · e-ISSN 1569-3988 · CODEN RJNMEH

All information regarding subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/rjnamm.

RESPONSIBLE EDITOR Yuri V. Vassilevski, Institute of Numerical Mathematics, Russian Academy of Sciences, Gubkin str. 8, Moscow 119333, Russia, e-mail: journal@dodo.inm.ras.ru

PUBLISHER Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

JOURNAL COORDINATOR Natalia Białka, e-mail: natalia.bialka@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS e-mail: anzeigen@degruyter.com

© 2025 Walter de Gruyter GmbH, Berlin/Boston, Germany

PRINTING Franz X. Stickle Druck und Verlag e.K., Ettenheim

Questions about General Product Safety Regulation: productsafety@degruyterbrill.com



Offenlegung der Inhaber und Beteiligungsverhältnisse gem. § 7a Abs. 1 Ziff. 1, Abs. 2 Ziff. 3 des Berliner Pressegesetzes: Die Gesellschafter der Walter de Gruyter GmbH sind: Dr. Georg-Martin Cram, Unternehmens-Systemberater, Stadtbergen; Cram, Maike, Wien (Österreich); Cram, Jens, Mannheim; Rodriguez Cram, Catharina, Mexico, DF (Mexiko); Cram, Ingrid, Betriebsleiterin, Tuxpan/Michoacan (Mexiko); Cram, Sabina, Mexico, DF (Mexiko); Cram, Silke, Wissenschaftlerin, Mexico DF (Mexiko); Cram, Björn, Aachen; Cram, Berit, Hamm; Cram-Gomez, Susana, Mexico DF (Mexiko); Cram-Heydrich, Walter, Mexico DF (Mexiko); Cram-Heydrich, Kurt, Angestellter, Cancún (Mexiko); Duvenbeck, Brigitta, Oberstudienrätin i.R., Bad Homburg; Gädeke, Gudula, M.A., Atemtherapeutin/Lehrerin, Tübingen; Gädeke, Martin, Student, Ingolstadt; Gomez Cram, Arturo Walter, Global Key Account Manager, Bonn; Gomez Cram, Ingrid Arlene, Studentin, Mexico, DF (Mexiko); Gomez Cram, Roberto, Assistant Professor, London (UK); Lubasch, Dr. Annette, Ärztin, Berlin; Schütz, Dr. Christa, Ärztin, Mannheim; Schütz, Sonja, Diplom.-Betriebswirtin (FH), Berlin; Schütz, Juliane, Berlin; Schütz, Antje, Berlin; Schütz, Valentin, Mannheim; Seils, Dorothee, Apothekerin, Stuttgart; Seils, Gabriele, Journalistin, Berlin; Seils, Christoph, Journalist, Berlin; Siebert, John-Walter, Pfarrer, Oberstenfeld; Anh Vinh Alwin Tran, Student, Zürich (Schweiz); Tran, Renate, Mediatorin, Zürich (Schweiz); Carmen Siebert, Angestellte, Kempten; Duyen Anh Johann Tran, Architekt, Zürich (Schweiz); Lang Lieu Laurin Tran, Lehrperson, Zürich (Schweiz); Duyen Mai Marie Tran, Studentin, Zürich (Schweiz); Anh Huy Merlin Tran, Schüler, Zürich (Schweiz)

Contents

Kirill V. Demyanko, Nikita V. Klyushnev, Andrey V. Boiko,
and Yuri M. Nechepurenko

**Numerical stability analysis of incompressible
boundary layers over ribbed surfaces — 1**

Kirill Karpov, Victor Korolev, and Natalia Sukhareva

**Statistical separation of mixtures in the problem of
reconstructing the coefficients of an Itô stochastic
process-type model of the interplanetary magnetic
flux density: ℓ_2 -distance minimization vs likelihood
maximization — 17**

Pavel A. Ostanin, Dmitry V. Kulyamin ,
Sergey V. Kostykin, Alexei E. Vasilev,
and Valentin P. Dymnikov

**Four-dimensional variational data assimilation
system for the Earth ionosphere — 33**

Vladimir V. Shaydurov, Aleksandr V. Vyatkin,
and Olga M. Cherednichenko

**Conservative second-order monotonic numerical
method for solving two-dimensional continuity
equation — 47**

Stanislav L. Stavtsev

**Preconditioners for large dense matrices
in a low-rank format — 61**

Alexander Zlotnik and Timofey Lomonosov

**On a semi-explicit fourth-order vector compact
scheme for the acoustic wave equation — 71**

Alexander A. Danilov, Alexey A. Liogky, and Fyodor A.
Syomin

**Corrigendum to: Temporally and spatially
segregated discretization for a coupled
electromechanical myocardium model — 89**