



# Operator Theory: Advances and Applications

---

Vol. 210

**Founded in 1979 by Israel Gohberg**

## *Editors:*

Joseph A. Ball (Blacksburg, VA, USA)  
Harry Dym (Rehovot, Israel)  
Marinus A. Kaashoek (Amsterdam, The Netherlands)  
Heinz Langer (Vienna, Austria)  
Christiane Tretter (Bern, Switzerland)

## *Associate Editors:*

Vadim Adamyan (Odessa, Ukraine)  
Albrecht Böttcher (Chemnitz, Germany)  
B. Malcolm Brown (Cardiff, UK)  
Raul Curto (Iowa City, IA, USA)  
Fritz Gesztesy (Columbia, MO, USA)  
Pavel Kurasov (Lund, Sweden)  
Leonid E. Lerer (Haifa, Israel)  
Vern Paulsen (Houston, TX, USA)  
Mihai Putinar (Santa Barbara, CA, USA)  
Leiba Rodman (Williamsburg, VA, USA)  
Ilya M. Spitkovsky (Williamsburg, VA, USA)

## *Honorary and Advisory Editorial Board:*

Lewis A. Coburn (Buffalo, NY, USA)  
Ciprian Foias (College Station, TX, USA)  
J. William Helton (San Diego, CA, USA)  
Thomas Kailath (Stanford, CA, USA)  
Peter Lancaster (Calgary, AB, Canada)  
Peter D. Lax (New York, NY, USA)  
Donald Sarason (Berkeley, CA, USA)  
Bernd Silbermann (Chemnitz, Germany)  
Harold Widom (Santa Cruz, CA, USA)

## **Subseries**

### **Linear Operators and Linear Systems**

#### *Subseries editors:*

Daniel Alpay (Beer Sheva, Israel)  
Birgit Jacob (Wuppertal, Germany)  
André C.M. Ran (Amsterdam, The Netherlands)

## **Subseries**

### **Advances in Partial Differential Equations**

#### *Subseries editors:*

Bert-Wolfgang Schulze (Potsdam, Germany)  
Michael Demuth (Clausthal, Germany)  
Jerome A. Goldstein (Memphis, TN, USA)  
Nobuyuki Tose (Yokohama, Japan)  
Ingo Witt (Göttingen, Germany)

# Recent Trends in Toeplitz and Pseudodifferential Operators

The Nikolai Vasilevskii Anniversary Volume

Roland Duduchava  
Israel Gohberg  
Sergei M. Grudsky  
Vladimir Rabinovich  
Editors

Birkhäuser

Editors:

Roland Duduchava  
Department of Mathematical Physics  
Andrea Razmadze Mathematical Institute  
M. Alexidze str. 1  
Tbilisi 0193  
Georgia  
e-mail: [dudu@rmi.acnet.ge](mailto:dudu@rmi.acnet.ge)

Israel Gohberg (Z"l)

Vladimir Rabinovich  
National Polytechnic Institute  
ESIME Zacatenco  
Av. IPN  
07738 Mexico, D.F.  
Mexico  
e-mail: [vladimir.rabinovich@gmail.com](mailto:vladimir.rabinovich@gmail.com)

Sergei M. Grudsky  
Departamento de Matemáticas  
CINVESTAV  
Av. I.P.N. 2508  
Col. San Pedro Zacatenco  
Apartado Postal 14-740  
Mexico, D.F.  
Mexico  
e-mail: [grudsky@math.cinvestav.mx](mailto:grudsky@math.cinvestav.mx)

2010 Mathematics Subject Classification: 47-06

Library of Congress Control Number: 2010928340

Bibliographic information published by Die Deutsche Bibliothek.  
Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie;  
detailed bibliographic data is available in the Internet at <http://dnb.ddb.de>

ISBN 978-3-0346-0547-2

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in other ways, and storage in data banks. For any kind of use permission of the copyright owner must be obtained.

© 2010 Springer Basel AG  
P.O. Box 133, CH-4010 Basel, Switzerland  
Part of Springer Science+Business Media  
Printed on acid-free paper produced from chlorine-free pulp. TCF∞  
Printed in Germany

ISBN 978-3-0346-0547-2  
9 8 7 6 5 4 3 2 1

e-ISBN 978-3-0346-0548-9  
[www.birkhauser.ch](http://www.birkhauser.ch)

# Contents

<i>S. Grudsky, Y. Latushkin and M. Shapiro</i>	
The Life and Work of Nikolai Vasilevski .....	1
Principal publications of Nikolai Vasilevski .....	6
<i>A. Böttcher, S.M. Grudsky and E.A. Maksimenko</i>	
On the Structure of the Eigenvectors of Large Hermitian Toeplitz Band Matrices .....	15
<i>V.D. Didenko</i>	
Complete Quasi-wandering Sets and Kernels of Functional Operators .....	37
<i>R. Duduchava</i>	
Lions' Lemma, Korn's Inequalities and the Lamé Operator on Hypersurfaces .....	43
<i>J.O. González-Cervantes, M.E. Luna-Elizarrarás and M. Shapiro</i>	
On the Bergman Theory for Solenoidal and Irrotational Vector Fields, I: General Theory .....	79
<i>M.G. Hajibayov and S.G. Samko</i>	
Weighted Estimates of Generalized Potentials in Variable Exponent Lebesgue Spaces on Homogeneous Spaces .....	107
<i>Yu.I. Karlovich and J. Loreto Hernández</i>	
Wiener-Hopf Operators with Oscillating Symbols on Weighted Lebesgue Spaces .....	123
<i>V.V. Kucherenko and A. Kryuko</i>	
On the Ill-posed Hyperbolic Systems with a Multiplicity Change Point of Not Less Than the Third Order .....	147
<i>M. Loaiza and A. Sánchez-Nungaray</i>	
On $C^*$ -Algebras of Super Toeplitz Operators with Radial Symbols ...	175

<i>H. Mascarenhas and B. Silbermann</i>	
Universality of Some $C^*$ -Algebra Generated by a Unitary and a Self-adjoint Idempotent .....	189
<i>R. Quiroga-Barranco</i>	
Commutative Algebras of Toeplitz Operators and Lagrangian Foliations .....	195
<i>V. Rabinovich and S. Roch</i>	
Exponential Estimates of Eigenfunctions of Matrix Schrödinger and Dirac Operators .....	203
<i>N. Tarkhanov</i>	
The Laplace-Beltrami Operator on a Rotationally Symmetric Surface .....	217
<i>A. Unterberger</i>	
On the Structure of Operators with Automorphic Symbols .....	233
<i>H. Upmeyer</i>	
Hilbert Bundles and Flat Connexions over Hermitian Symmetric Domains .....	249



*Nikolai Vasilevski*