

# Encyclopaedia of Mathematical Sciences

Volume 72

Editor-in-Chief: R. V. Gamkrelidze

**Springer-Verlag Berlin Heidelberg GmbH**

V. P. Havin · N. K. Nikol'skij (Eds.)

# Commutative Harmonic Analysis III

Generalized Functions. Applications

With 34 Figures



Springer

Consulting Editors of the Series:  
A.A. Agrachev, A.A. Gonchar, E. F. Mishchenko,  
N.M. Ostianu, V.P. Sakharova, A. B. Zhishchenko

Title of the Russian edition:  
Itogi nauki i tekhniki, Sovremennye problemy matematiki,  
Fundamental'nye napravleniya, Vol. 72. Kommutativnyi garmonicheskij analiz 3,  
Publisher VINITI, Moscow 1991

*Cataloging-in-Publication Data applied for*

Die Deutsche Bibliothek - CIP- Einheitsaufnahme  
Commutative harmonic analysis / V.P. Khavin; N.K. Nikol'skij (ed.). - Berlin; Heidelberg; New York;  
London; Paris; Tokyo; Hong Kong; Barcelona; Budapest: Springer.

Einheitssacht.: Kommutativnyi garmoniĭeskij analiz (engl.) Literaturangaben

NE: Chavin, Viktor P. (Hrsg); EST

3. Generalized functions, applications. - 1995

(Encyclopaedia of mathematical sciences; Vol. 72)

ISBN 978-3-642-63380-5 ISBN 978-3-642-57854-0 (eBook)

DOI 10.1007/978-3-642-57854-0

NE: GT

Mathematics Subject Classification (1991): 42-02, 44-02, 78A97, 78-02

ISBN 978-3-642-63380-5

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, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

© Springer-Verlag Berlin Heidelberg 1995

Originally published by Springer-Verlag Berlin Heidelberg New York in 1995

Softcover reprint of the hardcover 1st edition 1995

Typesetting: Camera-ready copy from the translator using a Springer T<sub>E</sub>X macro package

SPIN: 10031231

41/3140 - 5 4 3 2 1 0 - Printed on acid-free paper

## List of Editors, Authors and Translators

### *Editor-in-Chief*

R. V. Gamkrelidze, Russian Academy of Sciences, Steklov Mathematical Institute, ul. Vavilova 42, 117966 Moscow, Institute for Scientific Information (VINITI), ul. Usievicha 20a, 125219 Moscow, Russia, e-mail: gam@ips.eps.msk.su

### *Consulting Editors*

- V. P. Havin, St. Petersburg State University, Department of Mathematics, Bibliotechnaya pl. 2, 198904 St. Petersburg, Saryj Peterhof, Russia, e-mail: havin@math.lgu.spb.su and Department of Mathematics and Statistics, Mc Gill University, 805 Sherbrooke Street West, Montreal QC, Canada H3A 2K6 e-mail: havin@math.mcgill.ca
- N. K. Nikol'skij, Steklov Mathematical Institute, ul. Fontanka 27, 191011 St. Petersburg, Russia and Département de Mathématiques, Université de Bordeaux I, 351, Cours de la Liberation, 33405 Talence, Cedex, France, e-mail: nikolski@ceremab.u-bordeaux.fr

### *Authors*

- V. S. Buslaev, Department of Physics, St. Petersburg State University, Bibliotechnaya pl. 2, 198904 St. Petersburg, Saryj Peterhof, Russia, e-mail: buslaev@imi.spb.su
- V. P. Havin, St. Petersburg State University, Department of Mathematics, Bibliotechnaya pl. 2, 198904 St. Petersburg, Saryj Peterhof, Russia, e-mail: havin@math.lgu.spb.su
- B. Jöricke, Arbeitsgruppe „Algebraische Geometrie und Zahlentheorie, Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Humboldt-Universität Berlin, Jägerstraße 10-11, 10117 Berlin, Germany, e-mail: joericke@zahlen.ag-berlin.mpg.de
- V. P. Palamodov, Mathematical College, Independent Moscow University, Fotievoy 18, Moscow, Russia

### *Translator*

R. Cooke, Department of Mathematics and Statistics, University of Vermont, Burlington, VT 05405, USA, e-mail: cooke@emba.uvm.edu

# Contents

## **I. Distributions and Harmonic Analysis**

V. P. Palamodov

1

## **II. Optical and Acoustic Fourier Processors**

V. S. Buslaev

129

## **III. The Uncertainty Principle in Harmonic Analysis**

V. P. Havin and B. Jöricke

177

## **Index**

261