

EMS Tracts in Mathematics 6

EMS Tracts in Mathematics

Editorial Board:

Carlos E. Kenig (The University of Chicago, USA)

Andrew Ranicki (The University of Edinburgh, Great Britain)

Michael Röckner (Universität Bielefeld, Germany, and Purdue University, USA)

Vladimir Turaev (Department of Mathematics, Indiana University, Bloomington, USA)

Alexander Varchenko (The University of North Carolina at Chapel Hill, USA)

This series includes advanced texts and monographs covering all fields in pure and applied mathematics. *Tracts* will give a reliable introduction and reference to special fields of current research. The books in the series will in most cases be authored monographs, although edited volumes may be published if appropriate. They are addressed to graduate students seeking access to research topics as well as to the experts in the field working at the frontier of research.

- 1 Panagiota Daskalopoulos and Carlos E. Kenig, *Degenerate Diffusions*
- 2 Karl H. Hofmann and Sidney A. Morris, *The Lie Theory of Connected Pro-Lie Groups*
- 3 Ralf Meyer, *Local and Analytic Cyclic Homology*
- 4 Gohar Harutyunyan and B.-Wolfgang Schulze, *Elliptic Mixed, Transmission and Singular Crack Problems*
- 5 Gennadiy Feldman, *Functional Equations and Characterization Problems on Locally Compact Abelian Groups*

Erich Novak
Henryk Woźniakowski

Tractability of Multivariate Problems

Volume I: Linear Information



European Mathematical Society

Authors:

Erich Novak
Mathematisches Institut
Universität Jena
Ernst-Abbe-Platz 2
07743 Jena
Germany

Henryk Woźniakowski
Department of Computer Science
Columbia University
1214 Amsterdam Avenue
New York, NY 10027
USA

and
Institute of Applied Mathematics
University of Warsaw
Banacha 2, 02-097
Warsaw
Poland

E-Mail: novak@math.uni-jena.de

E-Mail: henryk@cs.columbia.edu

2000 Mathematics Subject Classification: 65-02; 65Y20, 68Q17, 68Q25, 41A63, 46E22, 28C20, 46E30

Key words: Curse of dimensionality, tractability, high-dimensional numerical problems, worst case setting, average case setting, randomized algorithms, weighted norms, product weights, finite-order weights

ISBN 978-3-03719-026-5

The Swiss National Library lists this publication in The Swiss Book, the Swiss national bibliography, and the detailed bibliographic data are available on the Internet at <http://www.helvetica.ch>.

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, broad-casting, 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.

© 2008 European Mathematical Society

Contact address:

European Mathematical Society Publishing House
Seminar for Applied Mathematics
ETH-Zentrum FLI C4
CH-8092 Zürich
Switzerland

Phone: +41 (0)44 632 34 36

Email: info@ems-ph.org

Homepage: www.ems-ph.org

Typeset using the authors' T_EX files. I. Zimmermann, Freiburg
Printed in Germany

9 8 7 6 5 4 3 2 1

For (für) Gabi.

*Most likely, she will not solve
any of the open problems
but you never know.*

*For (dla) my grandson Filip Woźniakowski
and his parents Agnieszka and Artur.*

*Today, Filip is only two years old.
But we hope that one day he will
read the book and solve some of
the remaining open problems.*