S E
M S M
E S

EMS Series of Lectures in Mathematics
Edited by Ari Laptev (Imperial College, London, UK)

EMS Series of Lectures in Mathematics is a book series aimed at students, professional mathematicians and scientists. It publishes polished notes arising from seminars or lecture series in all fields of pure and applied mathematics, including the reissue of classic texts of continuing interest. The individual volumes are intended to give a rapid and accessible introduction into their particular subject, guiding the audience to topics of current research and the more advanced and specialized literature.

Previously published in this series:
Katrin Wehrheim, *Uhlenbeck Compactness*
Torsten Ekedahl, *One Semester of Elliptic Curves*
Sergey V. Matveev, *Lectures on Algebraic Topology*
Joseph C. Várilly, *An Introduction to Noncommutative Geometry*
Reto Müller, *Differential Harnack Inequalities and the Ricci Flow*
Eustasio del Barrio, Paul Deheuvels and Sara van de Geer, *Lectures on Empirical Processes*
Iskander A. Taimanov, *Lectures on Differential Geometry*
Martin J. Mohlenkamp and María Cristina Pereyra, *Wavelets, Their Friends, and What They Can Do for You*
Stanley E. Payne and Joseph A. Thas, *Finite Generalized Quadrangles*
Masoud Khalkhali, *Basic Noncommutative Geometry*
Helge Holden, Kenneth H. Karlsen, Knut-Andreas Lie and Nils Henrik Risebro, *Splitting Methods for Partial Differential Equations with Rough Solutions*
Koichiro Harada, *"Moonshine" of Finite Groups*
Yurii A. Neretin, *Lectures on Gaussian Integral Operators and Classical Groups*
Damien Calaque and Carlo A. Rossi, *Lectures on Duflo Isomorphisms in Lie Algebra and Complex Geometry*
Claudio Carmeli, Lauren Caston and Rita Fioresi, *Mathematical Foundations of Supersymmetry*
Hans Triebel, *Faber Systems and Their Use in Sampling, Discrepancy, Numerical Integration*
Koen Thas, *A Course on Elation Quadrangles*
Benoît Grébert and Thomas Kappeler, *The Defocusing NLS Equation and Its Normal Form*
Armen Sergeev, *Lectures on Universal Teichmüller Space*
Matthias Aschenbrenner, Stefan Friedl and Henry Wilton, *3-Manifold Groups*
Hans Triebel, *Tempered Homogeneous Function Spaces*
Kathrin Bringmann, Yann Bugeaud, Titus Hilberdink and Jürgen Sander, *Four Faces of Number Theory*

Alberto Cavicchioli
Friedrich Hegenbarth
Dušan Repovš

Higher-Dimensional Generalized Manifolds: Surgery and Constructions

European Mathematical Society

Authors:

Prof. Alberto Cavicchioli
Dipartimento di Scienze Fisiche,
Informatiche e Matematiche
Università degli Studi di Modena e Reggio Emilia
via Giuseppe Campi 213/B
41125 Modena
Italy

E-mail: alberto.cavicchioli@unimore.it

Prof. Friedrich Hegenbarth
Dipartimento di Matematica 'Federigo Enriques'
Università degli Studi di Milano
Via Cesare Saldini 50
20133 Milano
Italy

E-mail: friedrich.hegenbarth@unimi.it

Prof. Dušan Repovš
Faculty of Education and
Faculty of Mathematics and Physics
University of Ljubljana
Kardeljeva ploščad 16
1000 Ljubljana
Slovenia

E-mail: dusan.repovs@guest.arnes.si

2010 Mathematics Subject Classification: Primary: 57P05, 57P10, 57P99, 57R65, 57R67; Secondary: 18F15, 19J25, 57N15, 57N60, 57N65

Key words: Homology manifold, Poincaré duality, degree 1 normal map, boundedly controlled surgery, surgery spectrum, assembly map, Quinn index, Euclidean neighborhood retract, cell-like resolution, disjoint disks property, manifold recognition problem

ISBN 978-3-03719-156-9

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.helveticat.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, 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.

© European Mathematical Society 2016

Contact address:
European Mathematical Society Publishing House
Seminar for Applied Mathematics
ETH-Zentrum SEW A27
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' TEX files: Alison Durham, Manchester, UK
Printing and binding: Beltz Bad Langensalza GmbH, Bad Langensalza, Germany
∞ Printed on acid free paper
9 8 7 6 5 4 3 2 1