EMS Textbooks in Mathematics

EMS Textbooks in Mathematics is a series of books aimed at students or professional mathematicians seeking an introduction into a particular field. The individual volumes are intended not only to provide relevant techniques, results, and applications, but also to afford insight into the motivations and ideas behind the theory. Suitably designed exercises help to master the subject and prepare the reader for the study of more advanced and specialized literature.

Jørn Justesen and Tom Høholdt, *A Course In Error-Correcting Codes*
Markus Stroppel, *Locally Compact Groups*
Peter Kunkel and Volker Mehrmann, *Differential-Algebraic Equations*
Dorothee D. Haroske and Hans Triebel, *Distributions, Sobolev Spaces, Elliptic Equations*
Thomas Timmermann, *An Invitation to Quantum Groups and Duality*
Oleg Bogopolski, *Introduction to Group Theory*
Marek Jarnicki and Peter Pflug, *First Steps in Several Complex Variables: Reinhardt Domains*
Tammo tom Dieck, *Algebraic Topology*
Mauro C. Beltrametti et al., *Lectures on Curves, Surfaces and Projective Varieties*
Wolfgang Woess, *Denumerable Markov Chains*
Eduard Zehnder, *Lectures on Dynamical Systems. Hamiltonian Vector Fields and Symplectic Capacities*
Andrzej Skowroński and Kunio Yamagata, *Frobenius Algebras I. Basic Representation Theory*
Piotr W. Nowak and Guoliang Yu, *Large Scale Geometry*
Joaquim Bruna and Juliá Cufí, *Complex Analysis*
Eduardo Casas-Alvero, *Analytic Projective Geometry*
Fabrice Baudoin, *Diffusion Processes and Stochastic Calculus*
Olivier Lablée, *Spectral Theory in Riemannian Geometry*
Dietmar A. Salamon, *Measure and Integration*
Andrzej Skowroński and Kunio Yamagata, *Frobenius Algebras II. Tilted and Hochschild Extension Algebras*

Jørn Justesen
Tom Høholdt

A Course In Error-Correcting Codes

Second edition

European Mathematical Society

Authors:

Jørn Justesen
Department of Photonics Engineering
Technical University of Denmark
2800 Kgs. Lyngby
Denmark

E-mail: jorn@justesen.info

Tom Høholdt
Department of Applied Mathematics and Computer Science
Technical University of Denmark
2800 Kgs. Lyngby
Denmark

E-mail: tomh@dtu.dk

2010 Mathematics Subject Classification: 94-01;12-01

Key words: Error-correcting codes, Reed–Solomon codes, convolutional codes, product codes, graph codes, algebraic geometry codes

First edition published in 2004 by the European Mathematical Society

ISBN 978-3-03719-179-8

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.

© 2017 European Mathematical Society

Contact address:

European Mathematical Society Publishing House
Seminar for Applied Mathematics
ETH-Zentrum SEW A21
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: le-tex publishing services GmbH, Leipzig, Germany
Printing and binding: Beltz Bad Langensalza GmbH, Bad Langensalza, Germany
∞ Printed on acid free paper
9 8 7 6 5 4 3 2 1