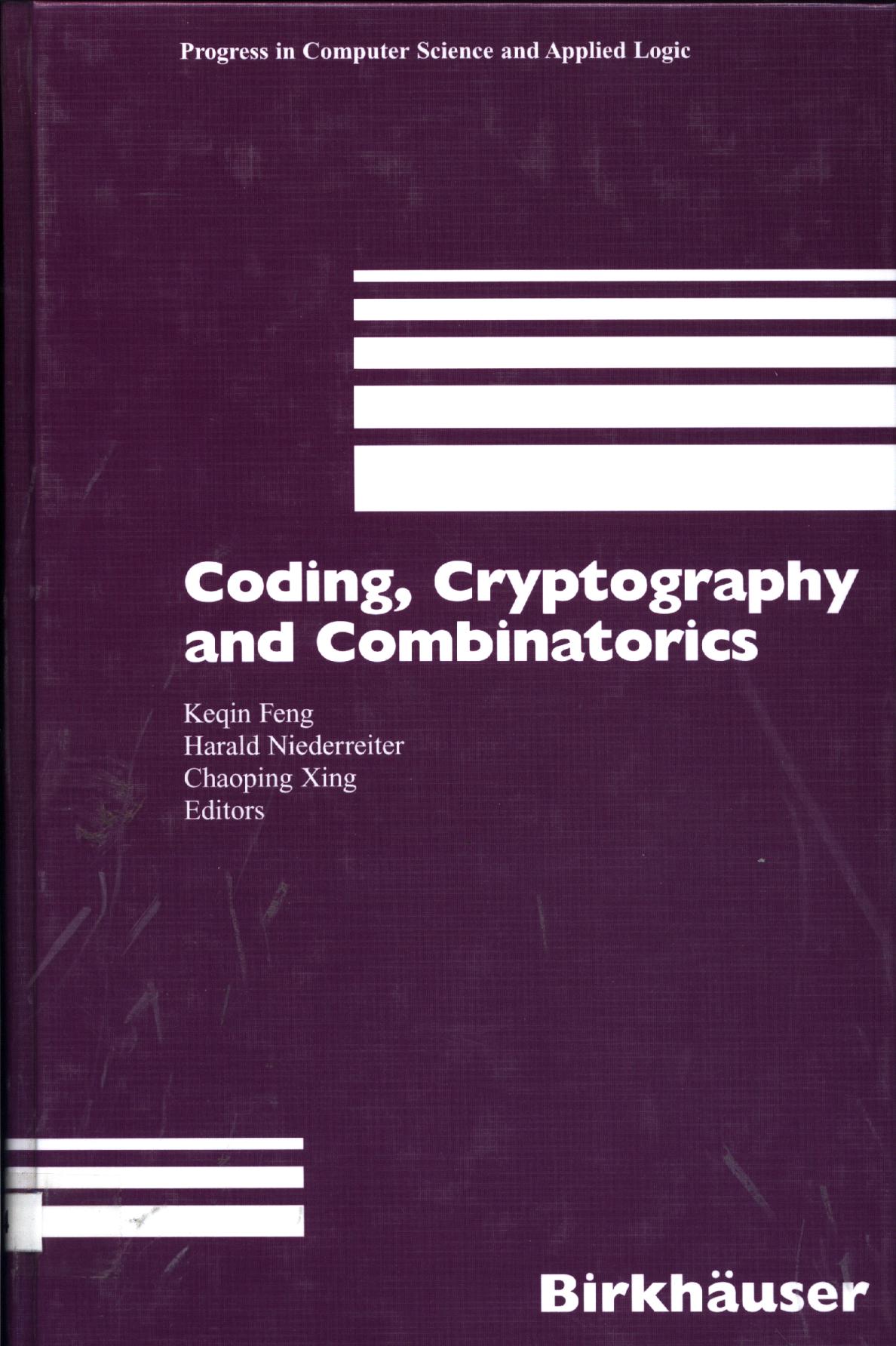


Progress in Computer Science and Applied Logic



Coding, Cryptography and Combinatorics

Keqin Feng
Harald Niederreiter
Chaoping Xing
Editors

Birkhäuser



BIBLIOTHEQUE DU CERIST

Progress in Computer Science and Applied Logic
Volume 23

Editor

John C. Cherniavsky, National Science Foundation

Associate Editors

Robert Constable, Cornell University

Jean Gallier, University of Pennsylvania

Richard Platek, Cornell University

Richard Statman, Carnegie-Mellon University

Coding, Cryptography and Combinatorics

Keqin Feng
Harald Niederreiter
Chaoping Xing
Editors



Birkhäuser Verlag
Basel · Boston · Berlin

Editors:

Keqin Feng
Department of Mathematical Sciences
Tsinghua University
Beijing 100084
China
kqfeng@math.hkbu.edu.hk
kfeng@math.tsinghua.edu.cn

Harald Niederreiter
Department of Mathematics
National University of Singapore
2 Science Drive 2
Singapore 117543
Republic of Singapore
nied@math.nus.edu.sg

Chaoping Xing
Department of Mathematics
National University of Singapore
2 Science Drive 2
Singapore 117543
Republic of Singapore
matxcp@nus.edu.sg



2000 Mathematics Subject Classification 11G18, 11G20, 11T71, 94A55, 94A60, 94A62,
94B05, 94B35, 94B60, 94B65

A CIP catalogue record for this book is available from the Library of Congress,
Washington D.C., USA

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 3-7643-2429-5 Birkhäuser Verlag, Basel – Boston – Berlin

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.

© 2004 Birkhäuser Verlag, P.O. Box 133, CH-4010 Basel, Switzerland
Part of Springer Science+Business Media
Printed on acid-free paper produced of chlorine-free pulp. TCF ∞
Printed in Germany
ISBN 3-7643-2429-5

9 8 7 6 5 4 3 2 1

www.birkhauser.ch



Table of Contents

Preface	vii
Invited Papers	
<i>Claude Carlet</i>	
On the Secondary Constructions of Resilient and Bent Functions	3
<i>Tadao Kasami</i>	
Adaptive Recursive MLD Algorithm Based on Parallel Concatenation Decomposition for Binary Linear Codes	29
<i>Wen-Ching Winnie Li</i>	
Modularity of Asymptotically Optimal Towers of Function Fields	51
<i>Peizhong Lu and Lianzhen Huang</i>	
A New Correlation Attack on LFSR Sequences with High Error Tolerance	67
<i>Amin Shokrollahi</i>	
LDPC Codes: An Introduction	85
Contributed Papers	
<i>Jintai Ding and Dieter Schmidt</i>	
The New Implementation Schemes of the TTM Cryptosystem Are Not Secure	113
<i>Elona Erez and Meir Feder</i>	
The Capacity Region of Broadcast Networks with Two Receivers	129
<i>Fang-Wei Fu, San Ling and Chaoping Xing</i>	
Constructions of Nonbinary Codes Correcting t -Symmetric Errors and Detecting All Unidirectional Errors: Magnitude Error Criterion	139
<i>Aline Gouget</i>	
On the Propagation Criterion of Boolean Functions	153
<i>Tor Helleseth, Jyrki Lahtonen and Petri Rosendahl</i>	
On Certain Equations over Finite Fields and Cross-Correlations of m -Sequences	169
<i>François Levy-dit-Vehel and Ludovic Perret</i>	
A Polly Cracker System Based on Satisfiability	177

<i>Jing Li</i>	Combinatorially Designed LDPC Codes Using Zech Logarithms and Congruential Sequences	193
<i>Lei Li and Shoulun Long</i>	New Constructions of Constant-Weight Codes	209
<i>San Ling and Patrick Solé</i>	Good Self-Dual Quasi-Cyclic Codes over \mathbf{F}_q , q Odd	223
<i>Wilfried Meidl</i>	Linear Complexity and k -Error Linear Complexity for p^n -Periodic Sequences	227
<i>Jean-Francis Michon, Pierre Valarcher and Jean-Baptiste Yunès</i>	HFE and BDDs: A Practical Attempt at Cryptanalysis	237
<i>Harald Niederreiter</i>	Digital Nets and Coding Theory	247
<i>Harald Niederreiter and Ferruh Özbudak</i>	Constructive Asymptotic Codes with an Improvement on the Tsfasman-Vlăduț-Zink and Xing Bounds	259
<i>Josef Pieprzyk and Huaxiong Wang</i>	Malleability Attacks on Multi-Party Key Agreement Protocols	277
<i>Charles C. Pinter</i>	Combinatorial Tableaux in Isoperimetry	289
<i>Yuansheng Tang</i>	On the Error Exponents of Reliability-Order-Based Decoding Algorithms for Linear Block Codes	303
<i>Xiaojian Tian and Cunsheng Ding</i>	A Construction of Authentication Codes with Secrecy	319
<i>Hitoshi Tokushige, Jun Asatani, Marc P.C. Fossorier and Tadao Kasami</i>	Selection Method of Test Patterns in Soft-Input and Output Iterative Bounded Distance Decoding Algorithm	331
<i>Yejing Wang, Luke McAven and Reihaneh Safavi-Naini</i>	Deletion Correcting Using Generalised Reed-Solomon Codes	345
<i>Arne Winterhof</i>	A Note on the Linear Complexity Profile of the Discrete Logarithm in Finite Fields	359
<i>Huapeng Wu, M. Anwar Hasan and Ian F. Blake</i>	Speeding Up RSA and Elliptic Curve Systems by Choosing Suitable Moduli	369
<i>Gang Yao, Feng Bao and Robert H. Deng</i>	Security Analysis of Three Oblivious Transfer Protocols	385
<i>Gang Yao, Guilin Wang and Yong Wang</i>	An Improved Identification Scheme	397