

CONTEMPORARY MATHEMATICS

650

Trends in Harmonic Analysis and Its Applications

AMS Special Session on
Harmonic Analysis and Its Applications
March 29–30, 2014
University of Maryland, Baltimore County,
Baltimore, MD

Jens G. Christensen
Susanna Dann
Azita Mayeli
Gestur Ólafsson
Editors



American Mathematical Society

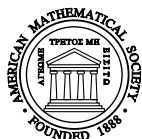
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2010 *Mathematics Subject Classification*. Primary 22E27, 32M15, 42C15, 46E22, 41A05, 43A07, 46L40, 43A32.

Library of Congress Cataloging-in-Publication Data

Trends in harmonic analysis and its applications : AMS special session on harmonic analysis and its applications : March 29–30, 2014, University of Maryland, Baltimore County, Baltimore, MD / Jens G. Christensen [and three others], editor.

pages cm. — (Contemporary mathematics ; volume 650)

Includes bibliographical references.

ISBN 978-1-4704-1879-3 (alk. paper)

1. Harmonic analysis—Congresses. I. Christensen, Jens Gerlach, 1975– editor.

QA403.T744 2015

515'.2433—dc23

2015011079

Contemporary Mathematics ISSN: 0271-4132 (print); ISSN: 1098-3627 (online)

DOI: <http://dx.doi.org/DOI>

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10 9 8 7 6 5 4 3 2 1 20 19 18 17 16 15

Contents

Frame Theory

- Phase retrieval and norm retrieval
SAEID BAHMANPOUR, JAMESON CAHILL, PETER G. CASAZZA, JOHN
JASPER, and LINDSEY M. WOODLAND 3
- On Lipschitz inversion of nonlinear redundant representations
RADU BALAN and DONGMIAN ZOU 15
- Tight and random nonorthogonal fusion frames
JAMESON CAHILL, PETER G. CASAZZA, MARTIN EHLER,
and SHIDONG LI 23
- Decompositions of rational Gabor representations
VIGNON OUSSA 37

Functional Analysis and C^* -algebras

- Representations of Cuntz-Krieger relations, dynamics on Bratteli-diagrams,
and path-space measures
SERGEY BEZUGLYI and PALLE E.T. JORGENSEN 57
- A survey of amenability theory for direct-limit groups
MATTHEW DAWSON and GESTUR ÓLAFSSON 89
- Explicit construction of equivalence bimodules between noncommutative
solenoids
FRÉDÉRIC LATRÉMOLIÈRE and JUDITH A. PACKER 111

Harmonic Analysis on Manifolds

- An application of hypergeometric shift operators to the χ -spherical Fourier
transform
VIVIAN M. HO and GESTUR ÓLAFSSON 143
- Harmonic analysis of a class of reproducing kernel Hilbert spaces arising from
groups
PALLE E.T. JORGENSEN, STEEN PEDERSEN, and FENG TIAN 157
- Approximations in L_p -norms and Besov spaces on compact manifolds
ISAAC Z. PESENSON 199

Preface

The present volume provides a snapshot of current trends within the field of harmonic analysis, both commutative and non-commutative, and its applications. We hope this volume will instigate collaboration, and motivate upcoming researchers in the field, as well as provide new ideas for established experts. For this reason the articles included in this volume are quite diverse.

The subjects fall into three categories: frame theory, functional analysis and C^* -algebras, and harmonic analysis on manifolds. Frame theory has emerged as an active subject in connection with non-harmonic Fourier series, wavelets and Gabor theory. Recent years have seen an added focus on the analysis of finite dimensional vector spaces using frames (rank one projections) and fusion frames (weighted orthogonal projections). This volume includes new developments on phase retrieval for finite dimensional frames (Bahmanpour, Cahill, Casazza, Jasper, Woodland and Balan, Zou), tight and random fusion frames (Cahill, Casazza, Ehler, Li) and Gabor frames (Oussa). The topics of functional analysis and C^* -algebras are deeply intertwined with harmonic analysis, and advances in one area often directly benefit the other. Included here are articles on non-commutative solenoids (Latrémolière, Packer), Cuntz-Krieger algebras (Bezuglyi, Jorgensen), and amenability of direct limit groups (Dawson, Ólafsson). In the area of harmonic analysis on manifolds there are contributions on spherical Fourier transforms on compact symmetric spaces (Ho, Ólafsson), Besov spaces on compact manifolds (Pesenson) and reproducing kernel spaces on Lie groups (Jorgensen, Pedersen, Tian).

The volume is based on an AMS special session *Harmonic Analysis and Its Applications* organized by Susanna Dann, Azita Mayeli and Gestur Ólafsson at the Fall Eastern Sectional Meeting in Baltimore 2014. We wish to sincerely thank all the participants who made the workshop a success, and in particular the authors who contributed to this volume.

We also thank the American Mathematical Society for making the special session happen, and a special thank you goes to Christine M. Thivierge, Associate Editor for Proceedings, for her effort in making this volume come to fruition.

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This volume contains the proceedings of the AMS Special Session on Harmonic Analysis and Its Applications held March 29–30, 2014, at the University of Maryland, Baltimore County, Baltimore, MD.

It provides an in depth look at the many directions taken by experts in Harmonic Analysis and related areas. The papers cover topics such as frame theory, Gabor analysis, interpolation and Besov spaces on compact manifolds, Cuntz-Krieger algebras, reproducing kernel spaces, solenoids, hypergeometric shift operators and analysis on infinite dimensional groups.

Expositions are by leading researchers in the field, both young and established. The papers consist of new results or new approaches to solutions, and at the same time provide an introduction into the respective subjects.

ISBN 978-1-4704-1879-3



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