CONTEMPORARY MATHEMATICS

737

Recent Trends in Operator Theory and Applications

Workshop
Recent Trends in Operator Theory and Applications
May 3–5, 2018
The University of Memphis, Memphis, TN

Fernanda Botelho
Editor

AMS American Mathematical Society

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Preface

This volume presents a collection of invited articles written by participants of the workshop on Recent Trends in Operator Theory and Applications (RTOTA 2018), held at the University of Memphis in May 2018. The contributions include both survey articles and original research papers focusing on methods and advances in operator theory.

Operator theory is an important branch of mathematics that offers a broad range of challenging and interesting research problems. Several areas of mathematics rely on techniques from operator theory, ranging from Banach space theory to partial differential equations and dynamical systems. The broad impact of this field also includes powerful tools for the development of other areas of science, including quantum computing, signal reconstruction, and approximation theory. This volume contains expository articles, co-authored by experienced and well recognized researchers and graduate students. These articles aim to introduce active fields within operator theory to early career researchers and graduate students. They provide insightful references and selection of results with articulation to modern research and advances in the area. Topics addressed by such articles include:

- Generalized numerical ranges and their application to study dilation and perturbation of operators, as well as connections to quantum error correction;
- Toeplitz operators and the existence of functions with specified zeroes in Toeplitz kernels. Their application to study linearly independent sets of reproducing kernel functions and their analogues in model spaces;
- The 2-local reflexivity problem for a set of operators on spaces of functions;
- Topics from the theory of preservers. A characterization of bijective linear maps between spaces of bounded operators that commute with the mean transformation; and
- Recent trends on the study of quotients of tensor product spaces and tensor operators.

The volume also includes research articles that present overviews of state-of-the-art techniques from operator theory with applications to recent research trends and open questions. Some of the topics addressed by these contributions are characterizations of classes of operators on JB*-triples, properties of Banach lattices and the Köthe dual space of a Banach lattice, topics from the geometry of Banach spaces, topological properties of operations, and applications of operator theory to statistical approximation.

An overall goal of all the articles is to present results accessible to the general public and, in particular, to newcomers to the topic.

The editor is most grateful to the National Science Foundation (Award DMS-1802313) for sponsorship and financial support. Special thanks go to all participants of the workshop and all contributors to this volume. Also special thanks go to many colleagues for their invaluable help with the refereeing process. The editor is also most thankful to the American Mathematical Society for making these papers widely available and by publising this volume.

The RTOTA 2018 workshop was in cooperation with the Association for Women in Mathematics (AWM) and supported their Non-Discrimination Statement.

Fernanda Botelho
Memphis, Tennessee
March 15, 2019

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Trends in Operator Theory • Botelho, Editor

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Topics addressed in this volume include: generalized numerical ranges and their application to study perturbation of operators, and connections to quantum error correction; a survey of results on Toeplitz operators, and applications of Toeplitz operators to the study of reproducing kernel functions; results on the 2-local reflexivity problem of a set of operators; topics from the theory of preservers; and recent trends on the study of quotients of tensor product spaces and tensor operators. It also includes research articles that present overviews of state-of-the-art techniques from operator theory as well as applications to recent research trends and open questions. A goal of all articles is to introduce topics within operator theory to the general public.

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