

Introduction

The *Third International Workshop on Elementary Operators and Their Applications* was held at the Department of Pure Mathematics of Queen's University Belfast between April 14 and 17, 2009. It was organised by Dr Martin Mathieu as a satellite to the joint meeting of the *British Mathematical Colloquium* and the *Annual Meeting of the Irish Mathematical Society* that took place at NUI Galway the week before. The funding received from the Irish Mathematical Society and the London Mathematical Society is gratefully acknowledged.

This series of workshops started in June 1991 at the Heinrich Fabri-Institute of the University of Tübingen, Germany and was continued in September 2001 at the University of Helsinki, Finland. At each of these meetings substantial progress in the research on elementary operators was reported. The proceedings volume of the 1991 workshop listed a number of difficult problems some of which, notably the norm problem for elementary operators have been solved in the meantime.

The present volume once again aims to present the state-of-the-art of our understanding of the theory of elementary operators and their applications. In fact, the applications are far more wide-ranging than one might expect and touch on many areas in Mathematics but also in Physics, such as Solid State Physics and Quantum Information Theory. Elementary operators are so simple in their definition that they occur everywhere; for instance, every linear mapping on a finite-dimensional semisimple Banach algebra is an elementary operator. It is no surprise therefore that one tries to approximate various classes of operators in infinite dimensions by elementary operators; some of the contributions in this book discuss these.

Yet the simple definition of an elementary operator entirely conceals the intricate and often challenging interplay between structural properties of elementary operators and the underlying algebras. This volume contains solicited articles by speakers at the workshop ranging from expository surveys to original research papers, each of which carefully refereed. They all bear witness to the very rich mathematics that is connected with the study of elementary operators, may it be multivariable spectral theory, the invariant subspace problem or tensor products of C^* -algebras.

As always in mathematics, results lead to new questions, and therefore the volume concludes with another list of open problems some of which were explained in the workshop problem session. May they inspire further exciting insights on elementary operators!

31 July 2010

Raúl E Curto, Iowa City
Martin Mathieu, Belfast



A picture of the workshop participants taken by the organiser

List of Participants

Jerónimo Alaminos, Universidad de Granada, Granada, Spain
Rob Archbold, University of Aberdeen, Aberdeen, Scotland
Ariel Blanco, Queen's University Belfast, Belfast, Northern Ireland
Nadia Boudi, Université Moulay Ismail, Meknès, Morocco
Raúl Curto, University of Iowa, Iowa City, USA
Lawrence Fialkow, SUNY at New Paltz, New Paltz, USA
Robin Harte, Trinity College Dublin, Dublin, Ireland
Derek Kitson, Trinity College Dublin, Dublin, Ireland
Rupert Levene, Trinity College Dublin, Dublin, Ireland
Bojan Magajna, University of Ljubljana, Ljubljana, Slovenia
Martin Mathieu, Queen's University Belfast, Belfast, Northern Ireland
Martin McGarvey, Queen's University Belfast, Belfast, Northern Ireland
F. Javier Meri, Granada, Universidad de Granada, Granada, Spain
Savvas Papapanagides, Queen's University Belfast, Belfast, Northern Ireland
Robert Pluta, Trinity College Dublin, Dublin, Ireland
Peter Rosenthal, University of Toronto, Toronto, Canada
Eero Saksman, University of Helsinki, Helsinki, Finland
Victor Shulman, Vologda State Technical University, Vologda, Russia
Franek Szafraniec, Jagiellonian University, Kraków, Poland
Richard Timoney, Trinity College Dublin, Dublin, Ireland
Ivan Todorov, Queen's University Belfast, Belfast, Northern Ireland
Ta Ngoc Tri, Lancaster University, Lancaster, England
Aleksej Turnšek, University of Ljubljana, Ljubljana, Slovenia
Lyudmila Turowska, Chalmers University of Technology and
the University of Gothenburg, Gothenburg, Sweden
Hans-Olav Tylli, University of Helsinki, Helsinki, Finland
Armando R. Villena, Universidad de Granada, Granada, Spain

Elementary Operators and Their Applications

3rd International Workshop held at Queen's University

Belfast, 14-17 April 2009

Curto, R.; Mathieu, M. (Eds.)

2011, XVI, 156 p., Hardcover

ISBN: 978-3-0348-0036-5

A product of Birkhäuser Basel