Trends in Mathematics

*Trends in Mathematics* is a series devoted to the publication of volumes arising from conferences and lecture series focusing on a particular topic from any area of mathematics. Its aim is to make current developments available to the community as rapidly as possible without compromise to quality and to archive these for reference.

Proposals for volumes can be submitted using the Online Book Project Submission Form at our website www.birkhauser-science.com.

Material submitted for publication must be screened and prepared as follows:

All contributions should undergo a reviewing process similar to that carried out by journals and be checked for correct use of language which, as a rule, is English. Articles without proofs, or which do not contain any significantly new results, should be rejected. High quality survey papers, however, are welcome.

We expect the organizers to deliver manuscripts in a form that is essentially ready for direct reproduction. Any version of \(T_\text{\textit{X}}\) is acceptable, but the entire collection of files must be in one particular dialect of \(T_\text{\textit{X}}\) and unified according to simple instructions available from Birkhäuser.

Furthermore, in order to guarantee the timely appearance of the proceedings it is essential that the final version of the entire material be submitted no later than one year after the conference.

Hypercomplex Analysis and Applications

Irene Sabadini
Frank Sommen
Editors
Contents

Preface .................................................................................................................. vii

C. Bisi and G. Gentili
On the Geometry of the Quaternionic Unit Disc .............................................. 1

F. Colombo and I. Sabadini
Bounded Perturbations of the Resolvent Operators Associated to the F-Spectrum ......................................................... 13

K. Coulembier, H. De Bie and F. Sommen
Harmonic and Monogenic Functions in Superspace ........................................ 29

S.-L. Eriksson and H. Orelma
A Hyperbolic Interpretation of Cauchy-Type Kernels in Hyperbolic Function Theory ......................................................... 43

M. Ferreira
Gyrogroups in Projective Hyperbolic Clifford Analysis ..................................... 61

P. Franch
Invariant Operators of First Order Generalizing the Dirac Operator in 2 Variables ......................................................... 81

G. Gentili and C. Stoppato
The Zero Sets of Slice Regular Functions and the Open Mapping Theorem .......... 95

R. Ghiloni and A. Perotti
A New Approach to Slice Regularity on Real Algebras ..................................... 109

R.S. Kraugh
On the Incompressible Viscous Stationary MHD Equations and Explicit Solution Formulas for Some Three-dimensional Radially Symmetric Domains ......................................................................... 125

R. Lavička
The Fischer Decomposition for the H-action and Its Applications ............. 139

S. Li and M. Fei
Bochner’s Formulae for Dunkl-Harmonics and Dunkl-Monogenics .......... 149

M. Libine
A Lieb–Reiter Relation for the 1-Parameter Family of Dunkl Operators .... 159
Preface

This volume contains some papers written by the participants to the Session “Clifford and Quaternionic Analysis” of the 7th ISAAC Conference (hosted at the Imperial College, London, UK, July 2009). The session proved to be particularly lively, as it hosted more than 35 speakers, and showed how the topic of hypercomplex analysis is fertile. The contents of the contributions cover several different aspects of hypercomplex analysis, ranging from Clifford analysis on superspace to the study of Dirac operators on surfaces, Dunkl monogenic functions, and applications, for example, to operator theory. The contributions represent the most recent achievements in the area and have been refereed.

The editors are grateful to the contributors to this volume and to the referees, for their painstaking and careful work. The editors thank the Imperial College in London for hosting the Conference and Professor Michael Ruzhansky, President of the ISAAC and Chairman of the local organising committee.

August 2010, Irene Sabadini
Frank Sommen