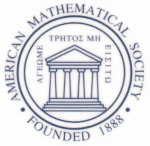
CONTEMPORARY MATHEMATICS

319

Ultrametric Functional Analysis

Seventh International Conference on
p-adic Functional Analysis
June 17–21, 2002
University of Nijmegen, The Netherlands

W. H. Schikhof
C. Perez-Garcia
A. Escassut
Editors



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Dedication

While this book was being prepared for publication, Wim Schikhof, our great friend and fine colleague, celebrated his 65th birthday. This would have been a perfect reason to dedicate this volume to him. But there were many other good reasons. It was a nice coincidence that he was fully responsible for organizing the Seventh International Conference on p-adic Functional Analysis which, as is explained in the Preface, was the *raison-d'être* for this volume. Moreover, he is one of this book's editors and also the co-author of two of the papers.

So, as his co-editors and on behalf of all the contributors, we are dedicating this volume to Wim Schikhof, one of the leaders of the p-adic community. We are counting on him to continue his progress in p-adic Functional Analysis.

A. Escassut
C. Perez-Garcia

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Preface

The Seventh International Conference on p-adic Functional Analysis was held at the University of Nijmegen, The Netherlands, June 17–21, 2002. This conference series began in Laredo, Spain (1990) and has continued with meetings every two years in various places.

About 35 researchers from 15 different countries attended the June 2002 conference. This book contains research articles based on 30-minute talks given at the conference. The main topic was how the influence of functional analysis has extended beyond real or complex numbers into many other areas such as non-Archimedean valued fields. Based on the growing influence of functional analysis on other disciplines, we have included, for the first time, three survey papers that address timely and important areas in functional analysis: p-adic meromorphic functions ("Uniqueness Problems and Applications of the Ultrametric Nevanlinna Theory"), nonclassical Hilbert spaces ("Hilbert-Like Spaces over Krull Valued Fields"), and p-adic locally convex spaces ("Locally Convex Spaces over Non-Archimedean Valued Fields").

Basic functional analysis is represented by contributions covering a wide range of topics: Hilbert and Banach spaces, locally convex spaces, orthogonality, inductive limits, spaces of continuous functions, strict topologies, operator theory, automatic continuity, measure and integration, Banach and topological algebras, summability methods, and ultrametric spaces. Analytic functions—meromorphic functions, roots of rational functions, characterization of injective holomorphic functions, and Gelfand transforms in algebras of analytic functions—are the subject of several papers. In addition the reader will find studies on differential equations, Banach Hopf-algebras, Cauchy theory on Levi-Civita fields, finite differences, weighted means, p-adic dynamical systems, and non-archimedean probability theory and stochastic processes.

We are grateful to the University of Nijmegen's analysis group, the Mathematical Research Institute (MRI), the Netherlands Organization for Scientific Research (NWO), and the Royal Dutch Academy of Sciences (KNAW) for their financial support. We wish to thank the American Mathematical Society for publishing this volume.

W. H. Schikhof
C. Perez-Garcia
A. Escassut

This volume contains research articles based on lectures given at the Seventh International Conference on p-adic Functional Analysis.

The articles, written by leading international experts, provide a complete overview of the latest contributions in basic functional analysis (Hilbert and Banach spaces, locally convex spaces, orthogonality, inductive limits, spaces of continuous functions, strict topologies, operator theory, automatic continuity, measure and integrations, Banach and topological algebras, summability methods, and ultrametric spaces), analytic functions (meromorphic functions, roots of rational functions, characterization of injective holomorphic functions, and Gelfand transforms in algebras of analytic functions), differential equations, Banach-Hopf algebras, Cauchy theory of Levi-Civita fields, finite differences, weighted means, p-adic dynamical systems, and non-Archimedean probability theory and stochastic processes.

The book is written for graduate students and research mathematicians. It also would make a good reference source for those in related areas, such as classical functional analysis, complex analytic functions, probability theory, dynamical systems, orthomodular spaces, number theory, and representations of p-adic groups.

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