

POLISH ACADEMY OF SCIENCES  
INSTITUTE OF MATHEMATICS

**BANACH  
CENTER**  
Publications

VOLUME **30**

Functional Analysis  
and  
Operator Theory

WARSZAWA 1994

FUNCTIONAL ANALYSIS  
AND  
OPERATOR THEORY

*Editor of the Volume*

JAROSLAV ZEMÁNEK

WARSZAWA 1994

## PREFACE

The 39th semester at the Stefan Banach International Mathematical Center in Warsaw, held March 2–May 30, 1992, coincided with the 100th anniversary of Stefan Banach’s birth, with the 60th anniversary of his book “Théorie des Opérations Linéaires”, and with the 20th anniversary of the Banach Center’s activity. The semester was attended by over 200 mathematicians from 33 countries. The program concentrated on approximation theory, functional analysis, operator theory, and the history of mathematics. It embraced 244 lectures and numerous informal discussions. Two meetings took place in Lvov, the city of Banach’s original school.

The present volume contains 26 invited papers written by participants of the semester. The articles aim at surveying some attractive topics of current research, their motivation and further prospects. They should be accessible to non-specialists, including graduate students. Many of the articles suggest interesting open problems, collect relevant literature, and sometimes also point out historical connections which have gone unnoticed before.

It seems that mathematics was created to help understanding by simplifying, not by causing complications. Therefore, the intention of this rather limited selection of topics is to show that, despite the anniversaries mentioned above, there are still reasonable questions to be answered at the heart of analysis, elegant recent results, even with elementary proofs that do not need to be obscured by technicalities. The main problem is to see them. Banach’s book is a good example of that. It is to be hoped that this idea will be pursued further in some future volumes of the Banach Center Publications series.

The Institute of Mathematics of the Polish Academy of Sciences wishes to thank the authors for their contributions.

The appearance of this volume, the 30th in the series, owes a great deal to the staff of the Publications Department of the Institute, including Jerzy Trzeciak who did the copy-editing, Anna Rudnik together with her typesetting group, Urszula Gąsiorowska, Małgorzata Jaworska, Anna Kopyt, Ewa Petryk, Agnieszka Świątkiewicz, Henryka Walas and Alicja Zienkiewicz, and Lidia Izert who read most of the proofs.

The organization of the semester relied upon the skill and generosity of Urszula Jurakowska, Małgorzata Pańnicka, Grażyna Pieścik-Bojarska, and Andrzej Sołtysiak.

It is certainly appropriate to conclude with warmest thanks to all these colleagues for their patience and cooperation, and also to Professors Zbigniew Ciesielski, Stanisław Woronowicz, and Wiesław Żelazko for sharing in the work of the organizing committee.

Warszawa, January 1994

*The Editor*

## CONTENTS

B. AUPETIT, Recent trends in the field of Jordan–Banach algebras . . . . .	9–19
C. J. K. BATTY, Some Tauberian theorems related to operator theory . . . . .	21–34
—, Asymptotic behaviour of semigroups of operators . . . . .	35–52
L. BURLANDO, Continuity of spectrum and spectral radius in Banach algebras . . . . .	53–100
G. CORACH, Operator inequalities, geodesics and interpolation . . . . .	101–115
Š. DRAHOVSKÝ and M. ZAJAC, Hyperinvariant subspaces of operators on Hilbert spaces	117–126
J. ESTERLE, Uniqueness, strong forms of uniqueness and negative powers of contrac- tions . . . . .	127–145
Yu. B. FARFOROVSKAYA, Functions of operators and their commutators in perturbation theory . . . . .	147–159
M. GONZÁLEZ and A. MARTINÓN, On incomparability of Banach spaces . . . . .	161–174
S. GRABINER, Weighted convolution algebras and their homomorphisms . . . . .	175–190
L. KÉRCHEY, Unitary asymptotes of Hilbert space operators . . . . .	191–201
T. J. LAFFEY, Conjugacy and factorization results on matrix groups . . . . .	203–221
K. B. LAURSEN, Multipliers and local spectral theory . . . . .	223–236
M. MATHIEU, Where to find the image of a derivation . . . . .	237–249
V. MÜLLER, Local behaviour of operators . . . . .	251–258
—, Nil, nilpotent and PI-algebras . . . . .	259–265
G. J. MURPHY, Aspects of the theory of derivations . . . . .	267–275
S. N. NABOKO, The boundary behaviour of $\mathfrak{S}_p$ -valued functions analytic in the half- plane with nonnegative imaginary part . . . . .	277–285
D. PETZ, A survey of certain trace inequalities . . . . .	287–298
A. RODRÍGUEZ PALACIOS, Nonassociative normed algebras: geometric aspects . . . . .	299–311
V. S. SHUL'MAN, Invariant subspaces and spectral mapping theorems . . . . .	313–325
A. R. SOUROUR, The Gleason–Kahane–Żelazko theorem and its generalizations . . . . .	327–331
J. WERMER, Pick interpolation for a uniform algebra . . . . .	333–335
P. Y. WU, Additive combinations of special operators . . . . .	337–361
W. ŻELAZKO, Generation of $B(X)$ by two commutative subalgebras—results and open problems . . . . .	363–367
J. ZEMÁNEK, On the Gelfand–Hille theorems . . . . .	369–385