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Book reviews

Antonio J. Guirao, Vicente Montesinos and Václav Zizler, Open problems in the geometry and analysis of Banach spaces. Cham: Springer 2016, xii + 169 p., ISBN 978-3-319-33571-1/hbk; 978-3-319-33572-8/ebook.

This is a collection of 304 open research problems from Banach space theory and related areas (measure theory, vector measures, nonlinear analysis, best approximation and optimization).

The problems are grouped into seven chapters: 1. *Basic linear structure* (Schauder bases, approximation properties, weak Hilbert spaces, Daugavet property); 2. *Basic linear geometry* (Chebyshev sets, isometries, Banach-Mazur distance, rotund renormings); 3. *Biorthogonal systems* (Markushevich bases, Auerbach bases, weakly compactly generated Banach spaces); 4. *Differentiability and structure, renormings* (Asplund spaces, weak Asplund spaces, Gâteaux and Fréchet differentiability, Krein-Milman and Radon-Nikodým properties, norm-attaining functionals and operators); 5. *Nonlinear geometry* (Lipschitz-free spaces, Lipschitz homeomorphisms and Lipschitz quotients); 6. *Some more nonseparable problems* (Schauder basis in nonseparable setting, equilateral sets); 7. *Some applications* (fixed points, Riemann integrability of vector-valued functions).

As the authors point out in the Preface:

> Some of the problems are longstanding open problems, some are recent, some are more important, and some are only "local" problems. Some would require new ideas, and some may go only with a subtle combination of known facts.

The book is very well organized - every problem is preceded by an introductory part containing the notions and previous results necessary for its understanding, as well as references to significant papers or books containing partial solutions or related results. At the end there are a detailed index and a comprehensive table referring to the listed problems by subject (and a reference list, of course).

The second and the third named authors are coauthors of two impressive volumes:
M. Fabian, P. Habala, P. Hájek, V. Montesinos Santaluca, J. Pelant and V. Zizler, *Functional analysis and infinite-dimensional geometry.* CMS Books in Mathematics, 451 p., Springer, 2001, and
M. Fabian, P. Habala, P. Hájek, V. Montesinos Santaluca and V. Zizler, *Banach space theory. The basis for linear and nonlinear analysis*, CMS Books in Mathematics, 820 p, Springer, 2011.

The present collection of problems is tightly connected with the two books mentioned above, being often used by the authors to upgrade and update information

provided in these two references (as they confess in the Preface). All in all, the authors produced a marvelous piece of mathematical writing of great use for researchers in various fields of functional and mathematical analysis as well as for young graduate or PhD students.

S. Cobzaş

Advanced Courses of Mathematical Analysis V Proceedings of the Fifth International School; (edited by Juan Carlos Navarro Pascual and El Amn Kaidi); V International Course of Mathematical Analysis in Andalusia Universidad de Almería, Almería, Spain, 12 - 16 September 2011. ISBN: 978-981-4699-68-6 (hardcover), 978-981-4699-70-9 (ebook).

The courses of Mathematical Analysis in Andalusia started in 2002 at the University of Cádiz at the initiative of the late Professor Antonio Aizpuru. Their aim was to provide opportunities for different research groups in Andalusia working in various areas of Mathematical Analysis to share information about their research and to cooperate, and, at the same time, to introduce the young researchers to the most advanced research lines.

The project turned to be a great success, both concerning the conferences and the published volumes. The present volume is dedicated to the V International Course on Mathematical Analysis, carried out at the University of Almería, September 12–16, 2011, following the first one from 2002, the second (Granada 2004), the third (Huelva, 2007), and the fourth (Cádiz, 2009).

It contains the elaborated versions of four mincourses of three ours each and five plenary one-our presentations. Besides these plenary lectures the interested participants had the occasion to present their recent contributions, short communications or posters.

The minicourses are the following: B. Cascales, *Measurability and semicontinuity of multifunctions* (26 p), F. Cobos, *Introduction to interpolation theory* (22 p), L. Pick, *Optimality of function spaces in Sobolev embeddings* (69 p), and B. Russo, *Derivations and projections on Jordan triples: An introduction to nonassociative algebra, continuous cohomology, and quantum functional analysis* (10 p).

The one-our plenary lectures are dealing with topics as: weighted inequalities and extrapolation (J. Duoandikoetxea), Muckenhoupt-Wheeden Conjecture for Calderón-Zygmund operators (D. Cruz-Uribe, J. M Martell and C. Pérez), nonlinear partial differential equations and game theory (J D Rossi), the Radon-Nikodým theorem for vector measures and integral representation of operators on Banach function spaces (E. A. Sánchez Pérez), the Orlicz-Pettis theorem for multiplier convergent series (C. Swartz).

The volume contains papers of great interest, both for researchers in Functional Analysis, Operator Theory, Measure Theory as well as for young researchers and graduate students desiring to get a first-hand acquaintance with the last developments and open problems in various areas of Mathematical Analysis.

V. Anisiu