

## Foreword

This is a collection of articles on set theory written by some of the participants in the Research Programme on Set Theory and its Applications that took place at the *Centre de Recerca Matemàtica* (CRM) in Bellaterra (Barcelona). The Programme run from September 2003 to July 2004 and included an international conference on set theory in September 2003, an advanced course on Ramsey methods in analysis\* in January 2004, and a joint CRM-ICREA workshop on the foundations of set theory in June 2004, the latter held in Barcelona. A total of 33 short and long term visitors from 15 countries participated in the Programme.

This volume consists of two parts, the first containing survey papers on some of the mainstream areas of set theory, and the second containing original research papers. All of them are authored by visitors who took part in the set theory Programme or by participants in the Programme's activities.

The survey papers cover topics as Omega-logic, applications of set theory to lattice theory and Boolean algebras, real-valued measurable cardinals, complexity of sets and relations in continuum theory, weak subsystems of axiomatic set theory, definable versions of large cardinals, and selection theory for open covers of topological spaces.

As for the research papers, they range from topics such as the number of near-coherence classes of ultrafilters, the consistency strength of bounded forcing axioms,  $\mathcal{P}_\kappa(\lambda)$  combinatorics, some applications of morasses, subgroups of Abelian Polish groups, adding club subsets of  $\omega_2$  with finite conditions, the consistency strength of mutual stationarity, and new axioms of set theory.

We would like to thank all participants in the Programme and its related activities for their effort in making these very successful ventures. We also want to thank the CRM Director and its staff, as well as all the funding institutions, for making the Programme possible.

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Stevo Todorćević  
Editors

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\*The volume: Spiros A. Argyros and Stevo Todorćević, *Ramsey Methods in Analysis*. Advanced Courses in Mathematics CRM Barcelona. Birkhäuser 2005, contains the notes of the course in an expanded form.

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