

## Preface

The present volume comprises topics about the theory of harmonic analysis and its applications. We hope that it is a worthy addition to the references on orthogonal polynomials, homogenous polynomials, and wavelet spheroidal analysis.

All scientific work involves an armada of people. First, we wish to thank our professor, Samir Ben Ammou, professor of mathematics in the Department of Mathematics in the Faculty of Sciences at Monastir University, Tunisia, who supported this work by accepting us as members of his laboratory, The Computational Mathematics Laboratory. He also provided funding for participation in scientific conferences where discussions with specialists occurred and thus improved the work.

We would also like to thank Professor Slaiem Ben Farah, the dean of the Faculty of Sciences at Monastir University, for his unforgotten help with providing funding for us to participate in scientific conferences, especially the *International Colloquium on Harmonic Analysis, Probability Theory and Their Interactions* held in Hammamet, Tunisia, December 15–19, 2014, the *International Colloquium on Random Matrices and Orthogonal Polynomials* held in Hammamet, Tunisia, March 22–27, 2015, and the *Fourth Tunisian–Japanese Conference on Geometric and Harmonic Analysis on Homogenous Spaces and Applications* held at Monastir, Tunisia, 18–23 December, 2015.

We also wish to thank the staff at De Gruyter, especially the executive board members, Dr. Anke Beck, the editorial director for mathematics, physics, and engineering, Dr. Konrad Kieling, and also the project editor, Dr. Astrid Seifert. We thank all of them for their hospitality, co-operation, collaboration, and for the time they spent on our project.

The present book stems from lectures and papers on the topics developed and are gathered, re-developed, improved, and sometimes completed when there are missing developments. However, naturally, it is not exhaustive and may be critiqued, corrected, and improved by readers. So, we welcome comments and suggestions.

We also want to stress the fact that originally we planned to present more applications, especially applications of spheroidal wavelets. We regret their absence, which was due to the time constraints of the editor. We hope that what is presented in this volume will allow readers to become acquainted with the topics presented.

