

Preface

We present the first of two volumes, which are composed of more than 30 articles related to harmonic analysis. Harmonic analysis is a very old topic, which still continues to draw the interest of many mathematicians. Modern research in this area is motivated both by deeper and new theoretical questions and numerous practical applications. These volumes aim to provide a sample of some of these directions. All the authors were selectively invited and comprise both senior and junior mathematicians. We are pleased to have received an unexpectedly enthusiastic response to our invitations.

In response to the number of papers we received, it was suggested by Birkhäuser/Springer to split our book into two volumes. Chapters in each volume are organized into parts according to their topics, and the order of chapters in each part is alphabetical. This first volume, entitled “Frames and Other Bases in Abstract and Function Spaces,” consists of 16 chapters. It is quite homogeneous mathematically since every chapter relates to the notion of frames or bases of other types. The introduction to this volume contains some basic notions of the theory of frames and underlines the way the chapters fit into the general theme. The second volume, which is called “Recent Applications of Harmonic Analysis to Function Spaces, Differential Equations, and Data Science,” consists of 15 chapters and is very diverse. Its introduction is just a collection of extended abstracts.

We were lucky to receive excellent contributions by the authors, and we enjoyed working with them. We deeply appreciate the generous help of many of our colleagues who were willing to write very professional and honest reviews on submissions to our volumes. We are very thankful to John Benedetto, who is the series editor of the Birkhäuser Applied and Numerical Harmonic Analysis Series, for his constant and friendly support. We appreciate the constant assistance of Birkhäuser/Springer editors Danielle Walker and Benjamin Levitt. We are thankful to Meyer Pesenson and Alexander Powell for their constructive comments regarding introductions. We acknowledge our young colleague Hussein Awala for his help with organizing files and templates.

We hope these volumes will be useful for people working in different fields of harmonic analysis.

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Frames and Other Bases in Abstract and Function
Spaces

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