

Preface

This book was planned at the close of SampTA'97, an international workshop on sampling theory and applications held in 1997 in Aveiro, Portugal. These workshops are held biennially. The first-named co-editor attributes the remarkable success of the conference in Aveiro exclusively to the extraordinary effort and ability of his fellow co-editor.

A major feature of this book is Victor Katsnelson's English translation from the Russian of Kotel'nikov's classical sampling paper, *On the Transmission Capacity of the "Ether" and Wire in Electrocommunications* (Chapter 2). It is probably safe to say that, until now, Kotel'nikov's paper has been referenced more than it has been read by the Western scientific community. Our Introduction is Chapter 1, and it contains a mathematical history and perspective on sampling theory, as well as an outline of the volume and an overview of each chapter.

The remainder of the book is divided into three parts reflecting, respectively, the role of wavelet theory in sampling, a broad range of other modern mathematical methods used in sampling theory, and some current and important tools and applications. We deeply appreciate the excellent contributions by the authors, and it has been a pleasure working with each of them.

It is natural to envisage a sequel to this volume devoted more extensively to tools and applications. In fact, sampling theory is a natural component in the broad emerging area of mathematical engineering. For example, it is realistic to assert that mathematical engineering will be to today's mathematics departments what mathematical physics was to those a century ago; and it is no extravagance to note the fundamental impact of mathematics in engineering subjects such as speech and image processing, information theory, and biomedical engineering, to name but a few. Of course, Birkhäuser's book series, Applied and Numerical Harmonic Analysis, in which this volume appears, is devoted to such an interleaving of ideas and disciplines.

xii *Preface*

We have been fortunate beneficiaries of patience and professionalism, par excellence, from Birkhäuser's editorial offices in Boston. In particular, it is a great pleasure to acknowledge the help and guidance of Wayne Wheeler, Wayne Yuhasz, and, most extensively, Lauren Lavery. She tolerated our idiosyncracies, corrected our errant tendencies, and delivered the book. We hope you enjoy it.

John J. Benedetto
College Park, Maryland

Paulo J. S. G. Ferreira
Aveiro, Portugal