

# Preface

About ten years ago we started an investigation into some classes of “thin” subsets of discrete abelian groups. These classes were subclasses of “interpolation sets”, which are themselves a subclass of “Sidon sets”. While we did not always articulate them, we were motivated by several unsolved problems related to these sets. The most important are:

- Is every Sidon set a finite union of interpolation sets (or sets of some related class) [P 1]?
- Can a Sidon set be dense in the Bohr group [P 2]?

This book is our attempt to present what is known about interpolation sets in the context of those (and related) problems. We give the necessary background on Sidon sets and results related to both problems. Neither problem has been solved for  $\mathbb{Z}$  (though the answer to the first is yes for the duals of certain groups of bounded order and no to the second for a slightly smaller set of dual groups).

A surprise for us in writing this book was to see that what is known about Sidon sets is mostly algebraic (this relates to the first problem) and what is known about interpolation sets is mostly topological (the second problem). A theme of the book is thus the interplay of the algebraic and topological.

There are many questions to which we do not know the answer. The ones we think are the most important are flagged with a [P nn]. An index of open problems is at the end of the book.

We hope that this book will stimulate work on these questions.

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