

Preface

The book aims to provide discussions on the design of robust steerable broadband beamformer, from modelling (signal source, acoustic environment and sensor array) to designing beamformer weights to achieve desired response. The focus of this book is on nearfield-only, farfield-only, mixed nearfield–farfield, fixed and steerable robust broadband beamformer designs.

This book has been structured such that each subsequent chapter extends the previous chapter to provide an additional feature. The technical discussion starts from Chap. 2, which provides discussions on the signal source models, acoustic environments and sensor arrays. Chapter 3 starts to discuss design formulations for the fixed broadband beamformer, including the beamformer structure used. This provides a good starting point as fixed broadband beamformer design is simple and easy to understand without the complicated formulation to include beam steering and robustness. Chapter 4 extends the design formulation in the previous chapter to include beam steering capability. The formulation in Chap. 4 is later extended in Chap. 5 to include robustness against practical mismatches and errors. The formulations in this chapter encapsulate all the properties from the chapters before it.

Readers will be able to understand and possibly design robust steerable beamformer after reading this book. Interested readers can further refer to the references cited for detailed discussion on specific beamformer topics not covered by this book.

Australia
October 2015

Chiong Ching Lai
Sven Erik Nordholm
Yee Hong Leung

A Study into the Design of Steerable Microphone Arrays

Lai, C.C.; Nordholm, S.E.; Leung, Y.H.

2017, XI, 116 p. 66 illus., 48 illus. in color., Softcover

ISBN: 978-981-10-1689-9