

Broadband array processing

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Abstrak

This book describes the background and technology of array signal modeling. It presents the concept and formulation of beamformers and discusses several commonly used array performance measures. It also introduces two traditional types of beamformers: delay-and-sum and optimum beamformers.

Chapter 1 includes background information on array processing, while Chapters 2 and 3 discuss the DFT-based frequency-domain implementation of a broadband beamformer and the design of subband beamformers for frequency-domain broadband beamformers. Chapter 4 presents the FIR-based, time-domain implementation of the broadband beamformer, where the FIR beamformer is designed by separately designing the subband beamformers and the corresponding FIR filters. The techniques for optimal design of the FIR beamformer are developed in Chapter 5, and Chapters 6 and 7 focus on the modal beamforming problem for circular arrays for the frequency-domain modal beamformer and the time-domain modal beamformer. Lastly, the final chapters present frequency-domain and time-domain modal beamformers for spherical arrays.