

# Analisi Prestazioni Array A Ultrasuoni Basati Su ADS

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## Abstract

I sistemi per imaging a ultrasuoni, impiegati in ambito sonar e biomedicale, si basano su array di trasduttori elettro-acustici di tipo lineare o planare. Il design di tali array è attualmente basato su diverse tecniche, tra le quali si possono citare metodi di ottimizzazione stocastici (simulated annealing, genetic optimizers). Tali metodi permettono buoni risultati in termini di risoluzione del sistema di imaging, ma non permettono una analisi a-priori delle prestazioni attese. Inoltre, sono molto onerose dal punto di vista computazionale. In questo ambito, recentemente è stata introdotta una nuova metodologia basata sull'uso di particolari sequenze binarie (Almost Difference Sets) per la progettazione di array a ultrasuoni. Tale metodologia permette di realizzare array in modo efficiente, e con prestazioni elevate e predicibili. Scopo della presente attività è analizzare differenti configurazioni derivanti da tali array e calcolare prestazioni attese sia in scenari ideali (far field, scatteratori puntiformi) che realistici (near field, non linearità e scatteratori realistici)

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