

Thinning Di Array Di Grandi Dimensioni Mediante Uso Di Sequenze M-Arie A Bassa Autocorrelazione Ciclica

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Abstract

Il Thinning (assottigliamento) degli array di grandi dimensioni rappresenta un tema di ricerca da molti decenni: infatti, la riduzione del numero di elementi risulta in notevoli vantaggi (in termini economici e di peso) per gli array di grandi dimensioni. In questo ambito, gli approcci più comuni sono di tipo statistico (random arrays) o sono basate su tecniche euristiche.

Approcci alternativi al design delle sequenze di alimentazione per array di grandi dimensioni si basano sul fatto che è possibile dedurre le caratteristiche di radiazione dell'array dalle proprietà di autocorrelazione aperiodica delle sequenze (in generale, complesse) di alimentazione dell'array stesso. Tale osservazione può essere utilizzata per introdurre tecniche di thinning e progettazione di array di grandi dimensioni utilizzando sequenze con buone proprietà di autocorrelazione.

In letteratura, la progettazione di thinned array basata su questo approccio sfrutta sequenze binarie. Tali esempi si limitano però a geometrie molto specifiche. In questo contesto, l'utilizzo di sequenze M-arie per il thinning degli array si può tradurre in consistenti vantaggi a livello pratico, poiché permette di considerare geometrie molto più complesse del caso binario, e al contempo semplifica considerevolmente la complessità della rete di alimentazione per l'array rispetto all'utilizzo di alimentazioni complesse di valore arbitrario. Scopo del presente progetto è perciò quello di analizzare le sequenze m-arie esistenti in letteratura con buone proprietà di autocorrelazione al fine di effettuare la progettazione di sequenze di alimentazione ottime per thinned arrays.

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*This report is submitted in partial fulfillment of the degree of the course "ACM".
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