

# Realizzazione HW Prototipo Antenna Compromesso Somma-Differenza

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## Abstract

Pattern somma e differenza sono solitamente utilizzati in applicazioni di tipo monopulse radar tracking, dove i segnali misurati sui due modi (somma e differenza) sono confrontati tra loro per identificare la posizione angolare di un target. Ad oggi, i sistemi di antenne che permettono di generare tali pattern sono costituiti da antenne paraboliche multi-feeder, oppure da array (lineari o planari) aventi una doppia (completa o divisa in subarray) rete di alimentazione. Nel caso di array di antenne, i problemi principali sono dovuti all'elevata complessità circuitale (in quanto è necessario un divisore di potenza su ciascun elemento dell'array) e ai relativi costi.

Per evitare queste problematiche una possibile tecnica è quella basata sulla sintesi di antenne compromesso attraverso raggruppamento di elementi (sub-arraying). Tale strategia prevede di generare un pattern somma ottimo e considerare invece un pattern differenza approssimato ottenuto raggruppando tra loro elementi dell'array in sub-array ed utilizzando un coefficiente di guadagno per ogni sub-array. Il problema risulta dunque essere quello di trovare in che modo raggruppare gli elementi dell'array e che peso associare ad ogni aggregazione in modo tale che il pattern differenza generato soddisfi i parametri richiesti dall'utente.

Partendo dalla metodologia già sviluppata e presentata in letteratura che permette di definire sia le aggregazioni sia i pesi dei sub-array, l'obiettivo di tale progetto riguarda la realizzazione HW di un prototipo partendo da un risultato ottenuto per via numerica.

**Reference Bibliography:** Local Optimization, Array Synthesis and Sub-Arraying [1]-[14]; Local Optimization [15]; Array Synthesis [15]-[65]; Sub-Arraying [16]-[19].

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