Guidelines for Student Reports

Failure Correction in Antenne a Schiera con Sub-array per Applicazioni Monopulse Radar Tracking

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Abstract

La tecnica monopulse radar tracking utilizza pattern di tipo somma e differenza per ricavare la posizione (direzione e distanza) di un oggetto. Questi tipi di pattern sono generati utilizzando array lineari (2D tracking) o planari (3D tracking) di elementi alimentati in modo non-uniforme.
Nel caso si disponesse di reti di alimentazioni indipendenti, le eccitazioni sono calcolate utilizzando tecniche di sintesi analitiche di Dolph-Chebyshev o Taylor (pattern somma) e di Zolotarev o Bayliss (pattern differenza). Tale soluzione non è di norma utilizzata per l'elevata compessità cicuitale e costosità.
Se preferisce dunque generare un pattern somma ottimo e considerare invece un pattern (caso lineare) o due pattern (caso planare) differenza approssimati, ottenuti raggruppando tra loro gli elementi dell'array in sub-array ed assegnando ad ogni sub-array un guadagno appropriato. Tale tecnica di sintesi di antenne compromesso è detta tecnica del sub-arraying. Il problema di trovare in che modo raggruppare gli elementi dell'array e che peso associare ad ogni aggregazione è già stato ampliamente affrontato in letteratura.
Il problema della 'Failure Correction' in antenne di tipo Monopulse è invece una tematica di recente interesse e non affrontare finora dal punto di vista di reti di alimentazioni basate su sub-arraying.
Quindi lo scopo del presente progetto è quello di sviluppare una tecnica per "Failure Correction" in un array lineare con molti elementi (N>100) e valutarne gli effetti sul pattern di radiazione.

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