Abstract

Space Time Adaptive Processing (STAP) applied on signal received from different configurations of real elements using D3LS (Direct Data Domain Least Squares). We will discuss the impact of each typical element-missing on the performance of this approach and the precision of the estimated strength of the SOI. We are interested in five different antenna
configurations which are uniform linear equal spaced array, exponential spaced linear array, semicircular array, sinusoidal spaced array and planar array. The mutual coupling between real elements will affect on the estimation of complex amplitude of Signal of Interest (SOI). It is necessary to use a transformation matrix to compensate for the strong mutual coupling that exists between the antenna elements. Then, we will apply D3LS STAP on the compensated voltages. Numerical simulations are done using the three main methods of D3LS namely the forward, backward, and the forward–backward methods.

Reference

The Effect of Missing Elements on the Performance of D3LS STAP Approach using Real Antenna Elements

Key words
Direct Data Domain Least Squares (D3LS)  Space Time Adaptive Processing (STAP)