Abstract

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Space Time Adaptive Processing (STAP) using Uniformly Spaced Real Elements Based on Direct Data Domain Least Squares (D3LS) Approach

In this paper, STAP applied on signal from uniformly spaced real elements using D3LS. 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. The transformation matrix converts the voltages that are induced at the loads corresponding to the feed point of the array to an equivalent set of voltages that will be induced by the same incident wave in Uniform Linear Virtual Array (ULVA). Then, we will apply D3LS STAP on the compensated voltages. Numerical simulations are done using the three main methods of D3LS namely forward, backward, and forward–backward methods.