

Preface

In a given signal scenario, the phased array is expected to radiate in such a way that sufficient gain is maintained towards the desired directions, with no energy transmitted towards the hostile radars. This can be achieved with the help of an adaptive array processing, which involves an efficient adaptive algorithm. Further other design parameters of antenna array, platform effect, mutual coupling between the antenna elements affects the array performance. The surface over which antenna array is mounted affects the radiation and scattering characteristics of phased array.

This book describes the probe suppression in a cylindrical microstrip patch and dipole array. The effect of both conducting and dielectric cylinder is discussed. For such non-planar geometry, the radiation pattern synthesis is done by transforming element pattern using Euler rotation matrix. The optimal weights are calculated using the modified improved LMS algorithm. The adapted and quiescent antenna array patterns are generated for a given signal environment consisting of both desired and probing sources. It is shown through several illustrations that the array mounted over a cylinder along with an efficient adaptive algorithm is able to cater to the impinging signals, whether desired or hostile sources. The adapted pattern maintains a sufficient gain towards the desired sources with accurate and deep nulls towards each of the probing sources. This book includes the detailed analytical description of the active cancellation of probing sources by phased arrays mounted on non-planar conducting and dielectric surfaces, algorithm for weight adaptation towards the generation of antenna pattern, and numerous simulation results.

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