

Abstract

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One- and Two-Dimensional Direction of Arrival Estimation Using Eigenvector-Based Algorithm

The increasing importance of direction of arrival (DOA) estimation makes the development of smart antenna systems very fast. In this paper, an eigenvector-based algorithm is developed for one- and two-dimensional DOA (1D-DOA and 2D-DOA) estimation with a single snapshot and finite snapshots of data mixture produced by linear and planar (rectangular) antenna array, respectively. Simulation results show that the eigenvector-based algorithm is capable of estimating the 1D-DOA and 2D-DOA with lower root mean square error (RMSE) performance than the famous Matrix Pencil (MP) algorithm with a single data snapshot. Many important factors that affect the RMSE performance of both algorithms are investigated.