

Comparative Analysis of MUSIC Algorithm in Smart Antenna

Tithi Gunjan

*M. Tech. Scholar, Department of Electronics and Communication Engineering
Acropolis Institute of Technology and Research, Indore (M.P.), India
tithi.gunjan@gmail.com*

Gaurav Chaitanya

*Department of Electronics and Communication Engineering
Acropolis Institute of Technology and Research, Indore (M.P.), India*

Abstract – High-resolution signal parameter estimation is a major problem in many signal processing applications. Such applications contain direction of arrival (DOA) estimation for narrow band signals and wideband signal emitted by multiple sources and received by sensor arrays. It is well known that MUSIC algorithm outperforms any other method existing in the literature. This paper uses different MUSIC algorithms for DOA estimation viz; Simple MUSIC Algorithm, ROOT-MUSIC Algorithm, Spatially Smoothed MUSIC Algorithm and Toeplitz approximation based MUSIC algorithm. The matrix Toeplitz approximation recovers the Toeplitz structure, and the approximated matrix is used to obtain more accuracy estimates via MUSIC method.

Keywords – DOA, MUSIC, ROOT MUSIC, Toeplitz Matris.