

Abstract

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DOA Elevation and Azimuth Angles Estimation of GPS Jamming Signals Using Fast Orthogonal Search

This research introduces a new twodimensional direction of arrival (DOA) elevation and azimuth angles estimation technique for global positioning system (GPS) jamming signals in challenging environments based on the fast orthogonal search (FOS) method. FOS-DOA estimation is accommodated to process array structure optimized for interference rejection. Performance of FOS-DOA is compared to the predominant multiple signal classification (MUSIC) DOA estimation method. Results showed significant improvement in jamming detection of the multiple sources of interference with slight variations in their amplitude at jamming to signal ratio (JSR) 15dB and 45dB. The improvement introduced by the proposed DOA estimation technique is mainly in the accuracy of detecting the number of jammers and their direction of arrival.