

Documents

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Azimuth/elevation directional finding with automatic pair matching

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Abstract

We addressed the problem of two-dimensional (2D) direction-of-Arrival (DOA) elevation and azimuth angles estimation for multiple uncorrelated signals using L-shaped antenna array configuration. The key points of the proposed method are the following: (1) it obtains azimuth and elevation angles through construction of three cross-correlation matrices from the collected data of the received signals; this implies that the noise reduces significantly in the reconstructed data matrices; (2) it derives a parallel factor analysis (PARAFAC) model and applies trilinear least squares method to avoid pair matching problem between 2D DOA azimuth and elevation angles for multiple sources; (3) it does not require spectral peak searching; and (4) it has better 2D DOA estimation compared with signal parameters via rotational invariance technique and fourth-order signal parameters via rotational invariance technique. Simulation results demonstrate the estimation accuracy and the effectiveness of the proposed method. © 2016 Nizar Tayem.

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