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DOA estimation method using R matrix of the QR factorized data and its prototype implementation on NI-PXI platform
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Abstract
In this paper, we present a novel direction of arrival (DOA) estimation method for multiple incident RF sources. The proposed method finds the information about the signal and noise subspaces from the R matrix of the QR factorized received data matrix. The angle of the signal arrival is estimated from the signal subspace using similar approach as employed by the conventional MUSIC algorithm. The simulation results are shown which verify the accuracy of the proposed method in estimating the DOA of a single and two RF sources. A prototype implementation of the proposed method on National Instruments (NI) hardware and Lab VIEW software is also presented. The experiments are conducted for the DOA estimation of two RF sources lying at arbitrary angles from the array reference. The experimental results verify successful real time implementation of the proposed DOA estimation method. © 2014 IEEE.

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