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Elektrotechnik-Elektronik-Informationstechnik

EEI KOLLOQUIUM

Multi Snapshot Sparse Bayesian Learning for DOA Estimation

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The directions of arrival (DOA) of plane waves are estimated from multi-snapshot sensor array data using the Sparse Bayesian Learning (SBL) approach. Assuming as prior information independent zero-mean complex Gaussian distributed source amplitudes with hyperparameters the unknown variances (i.e. the source powers) and complex Gaussian likelihood with hyperparameter the unknown noise variance, the corresponding Gaussian posterior distribution is derived. For a given number of DOAs, the hyperparameters are automatically selected by maximizing the evidence and promote sparse DOA estimates. The resulting SBL scheme for DOA estimation is discussed and evaluated competitively against LASSO (l1-regularization), conventional beamforming, and MUSIC.