

## عنوان مقاله:

Quadratically Constrained Beamforming Applied to UCA

## محل انتشار:

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## خلاصه مقاله:

Uncertainty in direction of arrival (DOA) of desired signal may degrade performance of minimum variance distortionless response (MVDR) beamformer severely. In this paper we focus on an optimum beamformer which is robust to DOA errors and developed the beamformer to uniform circular arrays (UCA). Like traditional optimum beamformers, this beamformer must minimize the output power. Furthermore, in this beamformer, two extra constraints are imposed. These constraints force the beamformer to have gains greater than unity in two angles. In fact, we assume that DOA of desired signal is unknown, but it lies in the interval between two angles that we build our constraints. The diagonal loading method is used to make the beamformer gain to exceed unity in the interval between the two angles. The loading factor is calculated using a numerical algorithm. Complexity of this beamformer is the same as MVDR beamformer. Simulation results obtained for UCA show that the proposed beamformer has a good performance compared to linearly constrained minimum variance (LCMV) beamformer, traditional diagonal loading (DL) method, and extended diagonal loading method. Also it is shown that performance of the beamformer is robust against errors caused by estimating the autocorrelation matrix.

## کلمات کلیدی:

Direction of arrival (DOA) uncertainty, robust optimum beamforming, uniform circular array

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/154396>

