

# **A Centrosymmetric Array Comprising a Horizontal Uniform Circular Subarray and a Vertical Uniform Linear Subarray—Its Design in Reference to Its Direction-Finding Cramér–Rao Bound.**

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IEEE Transactions on Aerospace and Electronic Systems ( Volume: 57, Issue: 3, June 2021)

**DOI:** [10.1109/TAES.2020.3046089](https://doi.org/10.1109/TAES.2020.3046089)

## **Abstract:**

Azimuthal centrosymmetry in an array grid is typically associated with arrays that are circular, concentric, cylindrical, spherical, or hemispherical. However, a recently proposed alternative combines an azimuthal circular array with a linear vertical array. For this elegantly simple new array grid's use in the direction-of-arrival estimation, this article advances array-design insights to meet a given estimation-precision threshold, by examining the tradeoff between the azimuth-angle Cramér-Rao bound vis-a-vis the polar-angle Cramér-Rao bound in a proposed two-step design procedure.

IEEE Keywords: Sensor arrays,Acoustic arrays,Sensors,Array signal processing,Microphone arrays,Data models,Manifolds