论文

用信号子空间法对测向阵元位置进行校准

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摘要
天线阵元位置的不确定性会严重影响天线的测距和测向性能。本文针对基于阵列协方差矩阵特征值分解的测向方法, 在远场情况下, 提出了用三个未知精确方向的校准信号源对阵元位置进行校准的方法。文中详细叙述了利用提取出的信号子空间来进行校准的迭代算法, 证明了该算法能稳定地收敛到全局最优点。特别关键的是, 文中给出了选取校准源方向的技术。模拟结果表明, 本文所提出的方法是有效的, 也是可行的。

关键词　　测向　空间谱　校准

分类号

扩展功能

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SENSOR LOCATION CALIBRATION USING SIGNAL SUBSPACE METHODS FOR DIRECTION FINDING TECHNIQUE

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Abstract
The sensor location uncertainty of an array degrades severely its performance of the target-source's distance detection and direction finding. In the case of far field sources, for the direction finding technique based on decompositing the eigenvalue of a matrix, a new method is presented. The method calibrates the sensor location uncertainty utilizing three radiation sources whose directions are not known accurately. In this paper a new iterative algorithm using the extracted signal subspace is developed, and the iterative procedure is analysed in detail to show why this algorithm converges to the global optimal point. It is the very key point that a technique for selecting directions of calibrating sources is given. Simulation results illustrate that the new method presented here is successful and practicable.

Key words　 Direction finding　 Spatial spectrum　 Calibration

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