论文

MIMO双基地雷达空间多目标定位方法

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Multitarget Localization in Three Dimensions for MIMO Bistatic Radar

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摘要 该文提出了一种L型阵列配置MIMO双基地雷达空间多目标定位方法。该方法利用L型接收阵列所包含的相对发射阵和接收阵的目标4维角度信息，先对接收信号进行解相干处理，然后根据DOA矩阵法的思想构造估计矩阵，通过特征参数与待估参数之间特定关系，导出了多目标4维角度联合估计算法公式，进而实现双基地雷达的空间多目标定位。该算法不涉及多维非线性谱峰搜索，只需一次特征值分解，计算量较小，且估计出的参数可自动配对。仿真结果表明了该文算法的正确性和可行性。

关键词： 双基地雷达   MIMO技术   角度估计   多目标定位

Abstract： A novel method of multitarget localization in L shaped MIMO bistatic radar is proposed. Based on four angles information involved in L shaped receiving array from target to transmiter and receiver, the joint estimation algorithm for four angles of multitarget can be obtained by the following steps: uncorrelating the array data of received echoes first, then constructing estimation matrix based on the DOA matrix method, finally using the given relationship between the eigenvalue and the estimated parameters. As a result, the multitarget localization in three dimensions is achieved in the bistatic radar. The proposed algorithm does not refer to multi-dimensional nonlinear peak search, and need only once eigenvalue decomposition, so that the computed load of the algorithm is low, and the estimated parameters of the targets can be paired automatically. The correctness and effectiveness of the proposed method are verified with the computer simulation.

Keywords： Bistatic radar   MIMO technique   Angle estimation   Multitarget localization

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