一种新的双基地MIMO雷达收发角和多普勒频率联合估计方法

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A New Method for DOA-DOD and Doppler Frequency Jointly Estimating of Bistatic MIMO Radar

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摘要 该文提出了一种新的双基地MIMO雷达收发角和多普勒频率联合估计方法。利用匹配滤波器输出的信号特点，采用最小二乘法从信号中分别提取出多目标的多普勒矢量、接收角矢量和发射角矢量，然后采用迭代算法对这3个矢量进行更新以完成收发角和多普勒频率的联合估计。该方法复杂度低，运算时间少，且能够实现自动配对。仿真结果表明，与基于PARAFAC的方法相比，该文方法更易获得高精度的收发角和多普勒频率估计，具有更高的可靠性。

关键词： MIMO雷达　双基地　收发角　多普勒频率　迭代算法

Abstract：　This paper presents a new method to jointly estimate the Direction Of Arrival-Direction Of Departure (DOA-DOD) and Doppler frequency of bistatic MIMO radar. Utilizing the characteristics of the signal received, the Doppler frequency vector, DOA vector and DOD vector are obtained by using least square algorithm. Because these three vectors are interdependent, the iterative algorithm is then proposed to update them and to get finally the DOA-DOD and Doppler frequency estimations. The estimated parameters are automatically paired without the additional pairing method. The algorithm has low complexity and fast operation speed. Simulation results demonstrate that compared with the PARAFAC based method, this new method can get precise DOA-DOD and Doppler frequency estimations with higher probability.

Keywords：　MIMO radar　Bistatic　Direction Of Arrival-Direction Of Departure (DOA-DOD)　Doppler frequency　Iterative algorithm

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