

## MIMO系统中一种鲁棒的特征波束成形算法

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**摘要** 针对发射端不能获得精确瞬时信道信息的多输入多输出(MIMO)系统, 提出了一种鲁棒的特征波束成形算法。当接收端使用最小均方误差准则(MMSE)检测时, 检测后的MSE矩阵在高信噪比下服从逆wishart分布。用MSE矩阵均值的标量函数作为优化目标, 给出了当标量函数分别是schur凸函数和schur凹函数时的赋形向量, 并研究了使用几种常用的标量函数时相应的功率分配算法。仿真结果表明: 当发射端获得的信道信息不准确时, 提出的算法表现出比传统特征波束成形算法更低的误比特率, 并且当信道信息的不确定程度变化时, 提出算法的性能有很好的鲁棒性。

**关键词** [通信技术](#), [MIMO系统](#), [鲁棒性](#), [波束成形](#), [功率分配算法](#)

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## Robust eigenmode beamforming scheme for MIMO systems

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**Abstract** A robust eigenmode beamforming scheme was proposed for multi input multi output (MIMO) systems when the instantaneous channel information is not perfectly known at transmitter. Using minimum mean square error (MMSE) criterion at receiver, the mean square error (MSE) matrix submits to inverse wishart distribution at high signal to noise ratio (SNR). The beamforming vector was given when the objective functions were schur convex and schur concave repectively. Moreover powe4r allocation schemes were studied for some usual objective functions. Simulations show that the proposed scheme has a better performance than that of the traditional scheme when the channel information is not perfectly known at transmitter. And the scheme is obviously robust when the uncertainty of channel information changing.

**Key words** [communication](#) [MIMO systems](#) [robustness](#) [beamforming](#) [power allocation](#)

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