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论文

固定阵列长度两发多收MIMO系统功率偏移分析

于光炜, 牛 凯, 贺志强, 王绪振, 林家儒

北京邮电大学泛网无线通信教育部重点实验室 北京 100876

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摘要
高信噪比情况下，功率偏移是信噪比-容量曲线中信噪比轴的截距，优化功率偏移参数有助于提高系统容量。该文采用固定阵列长度的均匀直线阵，通过拟合三对角特普利茨矩阵行列式曲线，分析了接收天线间相关性以及收发天线数目的最大值对于两发多收单用户MIMO系统功率偏移的影响，得出了给定天线阵列长度情况下，功率偏移极值点的基本公式。仿真结果表明，可以利用极值点公式选择合理的接收天线数目，实现最优功率偏移。

关键词 多输入多输出 复用增益 功率偏移 高信噪比 特普利茨矩阵

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Power Offset Analysis of Two Transmit Multiple Receive MIMO Systems with Antenna Arrays of Fixed Length

Yu Guang-wei, Niu Kai, He Zhi-qiang, Wang Xu-zhen, Lin Jia-ru

Key Lab of Universal Wireless Communications, Ministry of Education,
Beijing University of Posts and Telecommunications, Beijing 100876, China

Abstract
In high SNR region, power offset is the zero-order term in SNR axis of SNR-capacity curve and its optimization is helpful to improve capacity. In this paper, based on fitting determinant curve of tri-diagonal Toeplitz matrix, expression of extreme points is derived to analyze power offset of two transmit multiple receive single-user MIMO systems with uniform linear antenna array of fixed length. These proposed extreme points are determined by correlation of receive antenna elements and maximum of number of antenna elements between transmit and receive arrays. According to the obtained expression, the simulation results show that optimal power offset can be achieved by selecting suitable number of receive antenna.

Key words MIMO Multiplexing gain Power offset High SNR Toeplitz matrix

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通讯作者 于光炜 yuguangwei1982@gmail.com

作者个人主页 于光炜; 牛 凯; 贺志强; 王绪振; 林家儒