

网络、通信、安全

互耦宽带MIMO系统容量分析

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摘要 研究了宽带通信系统中, 互耦现象对多输入多输出(MIMO)通信容量的影响。首先分析了天线阵列间的互耦作用, 并基于此推导出互耦条件下宽带通信系统的容量表达式。然后通过蒙特卡洛方法, 仿真了不同天线阵列配置下的系统容量。结果表明, 在天线阵列间距很近时, 天线阵列间的互耦效应能够改善天线阵列之间的相关性, 从而提高系统的容量。并且天线数目越多, 系统容量改善越大。该结论对宽带MIMO通信系统的天线设计起到一定的指导作用。

关键词 [宽带通信系统](#) [互耦](#) [系统容量](#) [多输入多输出](#)

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Analysis of broadband MIMO capacity with mutual coupling

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Abstract

In this paper, the impact of mutual coupling on multiple-input multiple-output (MIMO) communications capacity is studied in broadband communication system. First of all, mutual coupling between antenna arrays is analyzed, and the capacity of broadband communication system with mutual coupling is derived. Then through Monte Carlo method, system capacity are simulated under different antenna array configuration. The results show that when the antenna arrays become too close, the correlation of antenna array can be improved for mutual coupling effect, and consequently increase system capacity. The more antennae, the more the capacity increases. And this conclusion gives some guidelines for antenna design in broadband MIMO communication system.

Key words [broadband communication system](#) [mutual coupling](#) [system capacity](#) [multiple-input multiple-output \(MIMO\)](#)

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