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论文

智能天线非理想波束赋形对TD-SCDMA系统性能的影响

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摘要
在实际的无线网络中，由于无线信道的复杂性以及DOA估计的误差，会导致智能天线系统的波束赋形出现一定程度的偏差。该文通过分析智能天线系统的原理，提出了非理想波束赋形智能天线对系统性能影响的研究方法，研究了智能天线系统的鲁棒性以及不理想波束赋形的智能天线对TD-SCDMA系统性能的影响。理论和仿真结果表明，波束赋形的准确度直接影响移动通信系统的性能，系统所能容忍的波束赋形偏差有一个固定的门限值，该门限值随着系统负载的增加而减小。

关键词 智能天线 非理想波束赋形 系统容量

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Performance of TD-SCDMA System with Imperfect Beamforming Smart antennas

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Abstract
In practical wireless communication networks, downlink beamforming weights at the node B of smart antenna systems can be deteriorated due to variation of spatial signal vectors corresponding to mobile users or DOA estimation error. In this paper, the methodology for smart antenna systems with imperfect beamforming is proposed, the performance of smart antenna systems is studied in existing beamforming error scenarios and the accepted tolerance of the beamforming error in TD-SCDMA systems is researched on from the aspect of system capacity. On the one hand, the theoretical and simulation results show that beamforming accuracy of the smart antenna systems have great effect on the system capacity. On the other hand, they also indicate that the performance deterioration is remarkable if the beamforming error exceeds a threshold which is related to the system load.

Key words Smart antenna Imperfect beamforming System capacity

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