

分布式天线系统中的系统上行中断概率分析

王俊波^{*①②③} 王金元^③ 林敏^④ 陈明^{②*}

^①(清华大学软件学院 北京 100084) ^②(东南大学移动通信国家重点实验室 南京 210096)

^③(南京航空航天大学信息科学与技术学院 南京 210016) ^④(南京电讯技术研究所 南京 210007)

System Uplink Outage Probability Analysis in Distributed Antenna Systems

Wang Jun-bo^{①②③} Wang Jin-yuan^③ Lin Min^④ Chen Ming^{②*}

^①(School of Software, Tsinghua University, Beijing 100084, China) ^②(National Mobile Communication Research Laboratory, Southeast University, Nanjing 210096, China) ^③(College of Information Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China) ^④(Nanjing Telecommunication Technology Institute, Nanjing 210007, China)

摘要

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摘要 中断概率是无线通信系统的一个重要指标。该文针对分布式天线系统中的系统中断概率问题进行了研究。首先,建立了包含路径损耗、阴影衰落和瑞利衰落的复合信道模型;然后,在该信道模型下推导出给定移动台位置时的信噪比;接着,基于选择合并策略,分析出给定移动台位置时系统上行传输的中断概率表达式;最后,考虑到小区内移动台任意分布特点,文章给出系统上行中断概率闭合理论表达式。仿真结果表明,所提的系统上行中断概率理论表达式与仿真结果十分吻合。

关键词: 无线通信 分布式天线系统 系统中断概率 选择合并 上行传输 复合信道

Abstract: Outage probability is an important parameter in wireless communication systems. This paper studies the system outage probability in the Distributed Antenna Systems (DAS). Firstly, this paper establishes a composite channel model which takes into account three factors such as path loss, lognormal shadowing and Rayleigh fading. Based on the established channel model, the Signal-to-Noise Ratio (SNR) of Mobile Station (MS) over a given position is derived. Then, an uplink transmission expression of the outage probability for the MS over a given position is derived by employing the selective combining. Further, considering the distribution of MSs in the cell, a closed-form expression of the system outage probability is obtained. Numerical results show that the closed-form expression of the system uplink outage probability can match with the simulation results very well.

Keywords: Wireless communication Distributed Antenna Systems (DAS) System outage probability Selective combining Uplink transmission Composite channel

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通讯作者: 王俊波 Email: jbwang@nuaa.edu.cn

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