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无人机通信信道的统计模型

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A Statistical Model for the UAV Communication Channel

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摘要

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摘要 讨论了一种无人机通信信道的统计模型,分析了无人机通信信道的组成,给出了冲激响应模型,然后将信道按照无人机的实际飞行划分为3个主要的状态,即途中飞行状态、任务区域盘旋状态和起飞/降落状态,根据部分理论计算和参考文献分析了每个状态下信道的参数,最后给出了无人机在不同飞行状态下误码率性能的仿真结果。对于当前没有较完备的无人机通信系统实测数据时,进行无人机通信信道的统计模型建立和仿真等方面的研究具有重要意义。

关键词: 无人机 信道模型 WSSUS 地面反射波 多径分量

Abstract: A statistical model for UAV (Unmanned Aircraft Vehicle) communication channel is derived. The components of UAV communication channel and the channel impulse response are discussed. The situation of flight is divided into three major scenarios: en-route, circled, taking off and landing. Numerical simulation has been done according to the parameters from theoretical calculations and references. The model built in this paper has great significance to performance simulation of the UAV communication channel when no measurement data are available.

Keywords: UAV channel model WSSUS specular reflection multipath component

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