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一种基于PTS技术降低OFDM系统峰均比的改进算法

李恩玉* 杨士中 吴皓威 廖海黔*

重庆大学通信与测控中心 重庆 400030

An Improved Method for PAPR Reduction in OFDM Systems Based on the PTS

Li En-yu Yang Shi-zhong Wu Hao-wei Liao Hai-qian*

Center of Communication and Tracking Telemetering & Command, Chongqing University, Chongqing 400030, China

摘要 该文在研究部分传输序列(PTS)技术降低OFDM系统峰均功率比(PAPR)的基础上，提出了多级寻优的改进PTS方法。该方法通过增加寻优的级数，而减少每级优化所预设的相位集合中的元素个数来寻找最优相位旋转因子，从而改变传统PTS技术中的计算量随分割子序列数和待选相位集合元素的个数的增加而呈指数增长的趋势，并使该方法与次优搜索方法相结合。通过计算复杂度的分析和仿真结果表明，同传统的方法相比，该方法不仅能较大地降低计算复杂度，且能改善降低峰均功率比的性能。

关键词： 正交频分复用 部分传输序列 峰均比 傅里叶变换 累积互补函数

Abstract： In the Orthogonal Frequency Division Multiplexing (OFDM) systems, based on the studying of Peak to Average Power Ratio (PAPR) reduction by using Partial Transmit Sequence (PTS) technology, an improved PTS scheme of multi-stage optimization is proposed. This method is to find the optimal phase rotation factors by increasing the number of optimization steps and reducing the number of pre-determined phase elements in the set of each step, and change the trend of computational complexity which is higher with more disjoint sub-blocks and more predetermined phase factors. This method can be used in conjunction with suboptimal search algorithm. Analysis of computational complexity and simulation results show that, compared with traditional scheme, this method can not only largely reduce the computational complexity, but also reduce the PAPR.

Keywords： Orthogonal Frequency Division Multiplexing (OFDM) Partial Transmit Sequence (PTS) Peak to Average Power Ratio (PAPR) IDFT Complementary Camulative Distribution Function (CCDF)

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通讯作者: 李恩玉 Email: lienyu0123@163.com

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