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短文与研究通讯

一种基于“相位距离”降低CPM解调复杂度的新算法

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摘要：

连续相位调制（CPM）是一种恒包络的高效调制方式，由于其解调算法复杂度高，其应用长期以来受到限制。传统的CPM解调算法基本上是基于幅度信息而未考虑相位信息，因此复杂度较高。本文提出了一种依据CPM信号特征的相位距离的定义，利用2RC 4CPM对该定义的有效性进行了验证，并将其应用于降低最大似然序列检测算法的路径数，从而大幅降低了最优接收机解调的复杂度。仿真表明，在选取适当门限值的情况下，基于“相位距离”的最大似然序列检测算法性能接近最优接收机。

关键词： CPM 连续相位调制 低复杂度 相位距离

A Novel Algorithm for Reducing MLSE Complexity of CPM Based on Phase Distance

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Abstract:

Continuous Phase Modulation (CPM) is an efficient modulation scheme with constant envelop, however its applications have been constrained due to high complexity of the demodulation algorithms. Traditional demodulation algorithms are based on amplitude information rather than phase information,which results in its high complexity. A conception called Phase Distance based on the inherent characteristic of CPM signal is defined and verified based on the 2RC-4CPM. And a novel algorithm used to reduce the path number of MLSE algorithm based on this conception is presented. This algorithm can reduce the computation complexity of the optimum receiver considerably. Simulation results show that the degradation in error performance compared to the optimum receiver is less than 1dB with a proper threshold.

Keywords: CPM Continuous Phase Modulation Low Complexity Phase Distance

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参考文献：

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1. 周家喜，徐佩霞，戴旭初.一种基于循环平稳性的CPM信号调制阶数盲识别算法[J]. 信号处理, 2010,26(4): 577-582
2. 李庆坤，马红光，李正生，李庆会.编码MIMO系统中一种低复杂度次优软检测算法[J]. 信号处理, 2010,26(9): 1414-1418

3. 王宁, 彭华, 崔伟亮.一种非数据辅助的连续相位调制信号符号速率估计算法[J]. 信号处理, 2010,26(12): 1864-1869
4. 钟凯, 葛临东, 巩克现.基于Laurent分解的多指数CPM低复杂度序列检测算法[J]. 信号处理, 2011,27(5): 715-720
5. 胡玓秀, 雷霞, 李强.基于连续相位调制的协同分集系统在平坦衰落信道下的容量分析[J]. 信号处理, 2011,27(7): 1076-1081

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