

## 通信与网络

### 残留频偏下LDPC-MSK系统码辅助载波同步算法

赵旦峰, 周相超, 钱晋希, 付芳

哈尔滨工程大学信息与通信工程学院, 黑龙江 哈尔滨 150001

摘要:

针对低信噪比条件下低密度奇偶校验码〔CD\*2〕最小频移键控系统载波同步实现困难的问题, 提出了一种新的码辅助载波同步算法。该算法将译码软信息分别运用到基于代价函数的载波粗同步和基于最大似然迭代的载波细同步之中, 将同步器、解调器与译码器联合迭代, 从而实现较理想的载波同步。理论研究和仿真结果表明, 在低信噪比条件下, 该算法能够在较大频偏、大相偏范围内实现有效的载波同步, 并以较低系统复杂度的代价, 获得近似理想的系统性能。

关键词: 载波同步 码辅助 译码软信息 残留频偏

### Code aided carrier synchronization for LDPC-MSK systems in presence of residual frequency offset

ZHAO Dan feng, ZHOU Xiang chao, QIAN Jin xi, FU Fang

College of Information and Communication Engineering, Harbin Engineering University, Harbin 150001, China

Abstract:

Regarding the carrier synchronization difficulty of low density parity check code minimum shift keying (LDPC-MSK) systems existed at low signal-to-noise ratios (SNR), a new code aided carrier synchronization algorithm is proposed. The soft decoding information is utilized to coarse synchronization based on cost function and fine synchronization based on maximum likelihood (ML) criterion. The reliable carrier synchronization is achieved by conducting the joint iteration of synchronizer, demodulator and decoder. Both the theoretical studies and the simulation results show that, at the low SNR, the efficient carrier synchronization can be achieved with large frequency and phase offset. Almost ideal performance is obtained with rather low system complexity.

Keywords: carrier synchronization code aided soft decoding information residual frequency offset

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通讯作者:

作者简介:

作者Email:

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