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研究论文

高性能无数据辅助QPSK频偏估计新算法

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摘要：

针对无数据辅助的正交相移编码(QPSK)载波频偏估计，提出了一种去除调制信息的新方法，基于该方法又提出新的QPSK频偏估计算法，并结合离散傅里叶变换粗频偏估计方法对大频偏进行估计．与插值离散傅里叶变换频偏估计算法相比，新算法提高了对频偏变化的适应能力，使之在频偏缓变的情况下依然可以准确估计频偏．仿真以及FPGA实现结果表明，新算法在低信噪比下仍能接近克拉美罗界．

关键词： QPSK　无数据辅助　频偏估计　去调制

New high performance non-data-aided frequency estimation and implementation of QPSK

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Abstract:

A new scheme for modulation removal for Non-Data-Aided (NDA) QPSK signals is proposed. The algorithm based on this new scheme can make a large range of frequency estimation cooperated with the DFT coarse frequency estimation method. Compared with the estimation algorithm using DFT and interpolation, the new scheme can endure more frequency fluctuation and estimate accurately the frequency offset when the effset varies slowly. Simulations and FPGA implementation prove the new scheme's good performance that it closes to CRB even at a low SNR.

Keywords: QPSK　non-data-aided　frequency estimation　modulation removal

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