

算法研究

OFDM频偏信道联合估计算法

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摘要:

针对OFDM系统中频偏和信道联合估计问题进行了研究。为了克服单独估计的缺陷,提高精度,提出了一种低复杂度的频偏信道联合估计算法。该算法首先通过采用正交性质的恒包络零相关序列,运用最大似然法估计信道,提取频偏估计值,然后对信道结果进行修正,使之更接近真实信道。同时给出了频偏估计的克拉美罗界。仿真结果表明,相比于最小二乘联合估计法,本文算法估计均方误差更小,具有更好的估计性能。

关键词: 正交频分复用; 频偏估计; 信道估计; 联合估计; 最大似然; 克拉美罗界

Joint Frequency Offset and Channel Estimation Algorithm for OFDM

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Abstract:

oint estimation of the carriers frequency offsets and channels of OFDM system is considered. A computationally efficient joint estimator of carriers frequency offsets (CFO) and channels is developed to overcome the drawbacks of single estimation and improve estimation accuracy. By utilizing the constant amplitude zero autocorrelations (CAZAC) sequence, CIR parameters are estimated with the maximum likelihood criterion. And then CFO is calculated and modifies channel estimators. In addition, the frequency offsets Cramer Rao bound is proposed. Numerical simulations indicate the proposed low complexity estimators having less mean square errors outperform the least square (LS) joint estimation algorithm.

Keywords: orthogonal frequency division multiplexing frequency offset estimation channel estimation maximum likelihood Joint estimation Cramer - Rao bound

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