

论文

新的基于能量捕获的快速UWB同步算法

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摘要:

提出了一种基于能量捕获的超宽带同步算法。通过发送精心设计的训练序列和使用符号率的采样值,可以计算出符号头部能量和尾部能量,然后根据这两个能量值与同步参数的关系估计出同步参数。在信道信息未知的情况下,本算法可以实现帧量级的同步,在信道信息已知的情况下,可实现任意精度的同步。由于不需要复杂的搜索过程,本算法具有计算复杂度低、同步速度快的优点。仿真结果表明,本文所提算法的性能优于已有同类算法。

关键词:

Rapid synchronization algorithm for UWB systems based on energy capture

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Abstract:

A new synchronization scheme based on energy capture for Ultra Wideband (UWB) systems is proposed. With the help of judicious training symbols and symbol level samples, the energy values of the truncated tail and head of the received symbol waveform can be obtained. Then according to the two energy values the frame level timing acquisition is acquired. It is worth noting that with perfect knowledge of the multi path channel, the proposed scheme can achieve timing synchronization at any desirable resolution. In addition, the proposed algorithm only exploits symbol level samples without complex searching process, thus it turns out to not only speed up the synchronization, but also enjoys low complexity. Simulations and comparison confirm that the proposed algorithm outperforms existing alternatives in terms of normalized mean square error and bit error rate.

Keywords: communication ultra wideband (UWB) communications synchronization energy capture

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