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# 一种差分跳频频率转移函数算法

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# A Frequency Transform Function Algorithm for Differential Frequency Hopping

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摘要

为提高差分跳频频率转移路径的随机性和均匀性,在深入研究差分跳频技术和频率转移函数的基础上,引入一种优化的混沌序列对数据信息码进行扰乱,利用纠错能力较强的RS(Reed-Solomon)码和*m*序列实现对跳频间隔及频率子集的选择控制,构建了一种新的差分跳频频率转移函数算法。对算法的随机性和均匀性进行了仿真验证。仿真结果表明,相比于基于混沌序列的*G*函数算法和基于RS码和*m*序列的*G*函数算法,本文算法产生的跳频序列的随机性和均匀性均得到了良好改善。

关键词： 差分跳频 *G*函数 混沌序列 通信 扩频

Abstract:

To improve the randomness and uniformity of a differential frequency hopping sequence,a new frequency transform function algorithm is proposed based on a study of differential frequency hopping technology and the present frequency transform function algorithms. This algorithm adopts an optimized chaotic sequence to disturb the data information codes for good data randomness. It also employs the RS (Reed-Solomon) codes of good capability in correcting errors and the *m* sequence to control the frequency hopping interval and the frequency subsets for better characteristics of the frequency hopping sequence. The randomness and uniformity of the differential frequency hopping sequence utilizing the proposed algorithm are validated by simulation. A comparison with the frequency hopping sequences generated by one *G* function algorithm based on chaotic sequences and another based on RS code and *m* sequences shows that the favorable randomness and uniformity of the differential frequency hopping sequence generated with the new frequency transform function algorithm is improved.

Keywords: differential frequency hopping *G* function chaotic sequence communication spread spectrum

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