

基于狼群算法的球形译码算法研究

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摘 要: 在信号空间分集(SSD)系统中,使用球形译码算法可以有效降低接收机检测复杂度.但传统的球形译码算法在低信噪比情况下计算复杂度较高,为降低球形译码算法计算复杂度,分析了初始搜索半径设置对球形译码过程的影响,并利用狼群算法的寻优能力来获得最佳的初始搜索半径,在保证译码性能的前提下有效地降低了计算复杂度.仿真结果表明,基于狼群算法的球形译码算法可以获得与传统SD算法相同的性能,同时在低信噪比情况下有效降低了球形译码算法的计算复杂度.

关键词: 信号空间分集; 球形译码; 狼群算法; 初始搜索半径

Sphere Decoding Algorithm Based on Wolf Pack Algorithm

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Abstract: In the signal space diversity(SSD) system, the sphere decoding(SD) algorithm can reduce the complexity of the receiver, but it is high that computation complexity of traditional sphere decoding algorithm at low signal to noise ratio. In order to reduce the computation complexity, the influence of the initial search radius on the sphere decoding process is analyzed, and use optimization ability of wolf pack algorithm to obtain the best initial search radius. It can ensure decoding performance and reduce the computation complexity effectively. The simulation results show that the performance of sphere decoding algorithm based on wolf pack algorithm can be the same as that of traditional sphere decoding algorithm, and can reduce the computation complexity at low signal to noise ratio effectively.

Key words: signal space diversity; sphere decoding; wolf pack algorithm; initial search radius

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