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认知无线网络中一种基于蚁群优化的频谱分配算法

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An Ant Colony Optimization Algorithm for Spectrum Assignment in Cognitive Radio Networks

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摘要 针对认知无线电中的频谱分配问题，该文提出一种基于蚁群优化的频谱分配方法。该方法在授权用户和认知用户共存的认知网络模型中，通过蚁群访问各个认知节点，并释放信息素，从而实现概率型的全局搜索的并行频谱分配算法。与传统的频谱分配方式比较，该算法能够进行增强型学习积累，快速收敛到最优路径，从而获得了最优的平均信道效益。文中对该算法进行了分析和说明，并通过仿真证明了算法的有效性和稳定性。

关键词： 认知无线电 频谱分配 蚁群优化算法 信息素

Abstract： To solve the spectrum assignment issue in cognitive network, a new ant optimization algorithm for spectrum assignment is proposed in this paper. In the cognitive radio network model, where primary and secondary users are coexistent, ants visit secondary users as the node, and leave pheromones using channel rewards. By this way the optimized parallel algorithm is implemented. Compared with the traditional spectrum assignment method, it can implement enhanced accumulation by learning, fast coverage to the optimal resolution, and improve the performance in the whole network average throughput. The method is analyzed. Simulation results verify the stability and validity of the method.

Keywords： Cognitive Radio (CR) Spectrum assignment Ant colony optimization Pheromone

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