

# 新的二进制蝙蝠算法的频谱分配优化

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**摘要:** 针对认知无线网络中频谱分配优化和寻优收敛精度等难题, 在图论模型的基础上提出新的二进制蝙蝠算法, 并将其运用到认知无线电频谱分配中. 首先, 在频率更新中引入两个随机数来控制全局和局部的平衡; 其次, 在连续空间和离散空间转换过程中, 引入新的离散函数对速度到位置进行离散化; 最后, 采用新的二进制蝙蝠算法以最大化系统总效益和次用户公平性为目标与传统二进制蝙蝠算法进行对比实验. 结果表明, 新的二进制蝙蝠算法在应用实例中优于其他算法, 且能够有效、稳定用于频谱分配优化.

**关键词:** 认知无线电; 频谱分配; 二进制蝙蝠算法; 方向搜索

## Optimization of spectrum allocation for new binary bat algorithm

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**Abstract:** For the difficult problems of spectrum allocation optimization and optimal convergence accuracy in cognitive radio networks, a new binary bat algorithm is proposed to basis of graph theory model and applied to the optimization of cognitive radio spectrum allocation. Firstly, two random numbers are introduced in the frequency update to control the global and local balance. Secondly, a new discrete function is introduced to disperse the velocity to the position in the process of continuous space and discrete space conversion. Finally, the new binary bat algorithm and the traditional binary bat algorithm are compared with the goal of maximizing total system benefit and fairness of secondary user. The results show that the new binary bat algorithm is superior to other algorithms in the application and can be effectively and stably used for spectrum allocation optimization.

**Key words:** cognitive radio; spectrum allocation; binary bat algorithm; direction search

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