

基于改进蝙蝠算法的混合整数规划问题

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摘 要: 针对非线性混合整数规划问题, 提出了一种改进的蝙蝠算法. 构造出一种自适应调整的局部搜索步长, 同时对整数变量采用单位步长搜索, 以此逐步提高蝙蝠算法的局部开发能力; 引入自然选择原理, 平衡改进蝙蝠算法的全局搜索能力; 初始一个可行解, 保证算法的正确搜索方向. 通过 13 个常见的测试函数测试结果表明, 改进的蝙蝠算法对求解非线性混合整数规划问题, 在成功率和精度方面都不亚于改进的粒子群算法.

关键词: 蝙蝠算法; 非线性混合整数规划; 自适应搜索步长; 自然选择

An Improved Bat Algorithm for Solving Nonlinear Mixed Integer Optimization Problems

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Abstract: This paper proposed an improved BA algorithm for solving nonlinear mixed integer optimization problems(NMIP) problem, An adaptive local search step size is constructed, and the integer variable is searched by unit step size, this improves the local search ability of the improved algorithm. Natural selection principle can improve the global search ability of the improved algorithm. The improved algorithm uses a feasible solution to ensure the correct search direction of the algorithm. Experimental results of sixteen test function show that the improved bat algorithm is not inferior to the improved particle swarm optimization algorithm for solving nonlinear mixed integer optimization problems.

Key words: bat algorithm(BA); nonlinear mixed integer programming(NMIP); adaptive search step; natural selection

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