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## 一种自适应全局和声搜索算法

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### An adaptive global harmony search algorithm

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#### 摘要

针对新颖全局和声搜索(NGHS)算法过早收敛的问题,提出自适应全局和声搜索(AGHS)算法.引入差分向量范数定义和声记忆库多样性,给出新的位置更新策略,排除变异操作.以和声记忆库多样性信息为指导动态产生新和声,提高算法对解空间信息开发的能力,避免算法因过早收敛、易陷入局部最优的不足. AGHS算法操作更简单,需要设置的参数更少,将其与目前文献中较优的几种改进HS算法、PSO算法和GA算法进行性能测试,测试结果表明AGHS算法具有较高的寻优精度和较快的收敛速度.

**关键词** : 和声搜索, 变异, 范数, 多样性, 自适应

#### Abstract :

An adaptive global harmony search(AGHS) algorithm is proposed for the problem of premature convergence in novel global harmony search(NGHS) algorithm. A novel position updating strategy is employed in the AGHS algorithm and the mutation operation is excluded with the diversity of harmony memory which is characterized by the norm of differential vector. With the guidance of the diversity of harmony memory, the optimal performance of the algorithm is improved, which avoids the algorithm trapped in local optimal. In addition, the AGHS algorithm is simpler and less parameter needed. The simulation is carried out by using the optimization algorithm of AGHS, PSO, GA and other HS variants that have been proposed. The simulation results show that the AGHS algorithm has higher convergence precision and convergence rate.

**Key words** : harmony search mutation norm diversity adaptive

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