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并发遗传退火算法求解复杂非线性方程组

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Concurrent genetic-annealing algorithm for solving complex nonlinear equations

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摘要 问题求解空间的扩大和种群规模的增加,导致传统的遗传退火算法在求解复杂非线性方程组时显得迟缓和性能不足.在多核处理器的环境下,把并发机制和最大堆引入遗传退火算法,并应用于复杂非线性方程组的求解中,给出一种具体设计思路.仿真实验结果表明,该机制有效地提高了遗传退火算法的性能,加快了求解速度.

关键词: 复杂非线性方程组 并发 遗传退火算法 最大堆

Abstract: The expanding of problem-solving space and the increasing of population bring insufficient to genetic-annealing algorithm (GAA) which is based on classical design. In the condition of multi-processor, this paper not only takes concurrent mechanism and max heap into GAA, which is applied to solve the complex nonlinear equations, but also gives a specific designing idea. Simulation results demonstrate that the proposed methods improve the performance of GAA and accelerate the speed for solving such equations.

Key words: complex nonlinear equations concurrency genetic-annealing algorithm max heap

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