

论文

并行模式下分子散射模型的求解

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摘要:

串行模式下, 求解复杂电子分子碰撞的散射问题存在单机处理时间长、内存耗用大等缺陷, 而并行处理的思想可显著降低其计算时间, 是解决该问题的有效途径。在主-从结构的并行模型基础之上设计并实现了电子分子碰撞散射的并行算法, 提出了有效的优化步骤。实验结果得到了满意的加速比和并行效率, 验证了该方案的可行性与正确性。

关键词: 电子分子散射 主从结构 加速比 并行效率

Solution of molecule scattering model based on parallel mode

Abstract:

The solution of Electron-molecule scattering model based on serial mode meets two challenges: long running time and large memory requirement. Parallel computing which would reduce the workload of one computer is a useful method to meet the challenge. Based on master-slave parallel model structure, several optimized approaches were introduced and the parallel algorithm for Electron-molecule scattering was realized. Results of the experiments obtain satisfied speedup and parallel efficiency, and prove the feasibility and validity of this solution.

Keywords: electron-molecule scattering master-slave speedup parallel efficiency

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