



基于图形处理器的格子Boltzmann方法计算

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Computation of Lattice Boltzmann Method Based on Graphics Processing Unit

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摘要

由于图形处理器(GPU)最近几年迅速发展,基于GPU的计算作为一个新的研究方向已经引起越来越多人的关注.在综述国内外最新文献的基础上,从介绍GPU的高性能开始,分析GPU本身的特性,介绍GPU的计算模型并分析其流水线结构,阐述如何对GPU进行编程,并初步实现基于GPU的格子Boltzmann方法(LBM)计算.

关键词: [图形硬件](#); [图形处理器\(GPU\)](#); [图形流水线](#); [Cg](#)

Abstract:

Computation based on graphics processing unit (GPU) has attracted increasing attention as a new research direction. As an introduction to the high performance of GPU, this paper first analyzes features of GPU as reported in the literature published in the recent years. Computation model of GPU is introduced, and pipeline structure is analyzed. Programming on GPU is then discussed. Computation of lattice Boltzmann method (LBM) on GPU is implemented.

Keywords: [graphics hardware](#); [graphics processing unit \(GPU\)](#); [graphics pipeline](#); [Cg](#)

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