Astrophysics > Instrumentation and Methods for Astrophysics

A 3D radiative transfer framework: XIII. OpenCL implementation

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We discuss an implementation of our 3D radiative transfer (3DRT) framework with the OpenCL paradigm for general GPU computing. We implement the kernel for solving the 3DRT problem in Cartesian coordinates with periodic boundary conditions in the horizontal (x,y) plane, including the construction of the nearest neighbor $\Lstar$ and the operator splitting step. We present the results of a small and a large test case and compare the timing of the 3DRT calculations for serial CPUs and various GPUs. The latest available GPUs can lead to significant speedups for both small and large grids compared to serial (single core) computations.

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