

Cornell University Library We gratefully acknowledge support from the Simons Foundation and member institutions

arXiv.org > physics > arXiv:1107.5300

Physics > Computational Physics

Computation of electron quantum transport in graphene nanoribbons using GPU

S. Ihnatsenka

(Submitted on 26 Jul 2011 (v1), last revised 21 Jun 2012 (this version, v2))

The performance potential for simulating quantum electron transport on graphical processing units (GPUs) is studied. Using graphene ribbons of realistic sizes as an example it is shown that GPUs provide significant speed-ups in comparison to central processing units as the transverse dimension of the ribbon grows. The recursive Green's function algorithm is employed and implementation details on GPUs are discussed. Calculated conductances were found to accumulate significant numerical error due to single-precision floating-point arithmetic at energies close to the charge neutrality point of the graphene.

Comments:published version with correctionsSubjects:Computational Physics (physics.comp-ph); Mesoscale
and Nanoscale Physics (cond-mat.mes-hall)Journal reference:Comput. Phys. Commun. 183 (2012) 543--546DOI:10.1016/j.cpc.2011.11.019Cite as:arXiv:1107.5300 [physics.comp-ph]
(or arXiv:1107.5300v2 [physics.comp-ph] for this
version)

Submission history

From: Siarhei Ihnatsenka [view email] [v1] Tue, 26 Jul 2011 19:31:51 GMT (86kb,D) [v2] Thu, 21 Jun 2012 06:51:03 GMT (80kb,D)

Which authors of this paper are endorsers?

Link back to: arXiv, form interface, contact.

Search or Article-id

(Help | Advanced search) All papers

Download:

- PDF
- Other formats

Current browse context: physics.comp-ph

< prev | next >

new | recent | 1107

Change to browse by:

cond-mat cond-mat.mes-hall physics

References & Citations

NASA ADS

