Green's Functions Research and Education Enhancement Network

General

Identifier Green-2002-07-30-43

Title Hamiltonians and Green's functions which interpolate between two and three dimensions

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Characteristics

Language en-US

Description I propose to use Hamiltonians which contain two-dimensional and three-dimensional terms for the description of two-dimensional systems in physics. As a model system the evolution of three-dimensional wavefunctions in the presence of an in infinitely thin layer is studied. The model predicts distance laws for correlation functions which interpolate between two-dimensional and three-dimensional behavior. It also predicts that in certain cases transmission probabilities through thin layers should depend not only on the transverse, but also on the longitudinal momentum of the infalling particles. The model also yields a static potential which interpolates between the two-dimensional logarithmic potential at small distances and the three-dimensional 1=r-potential at large distances.

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Discipline

TaxonPath

Source Personal

lang

Taxon Green's function

lang

Taxon wave function

lang

Keywords Hamilton function

lang

Keywords hybrid Hamiltonian function

lang

Keywords 2-D

lang

Keywords 3-D

lang

Type Document

LifeCycle

LCCreate

Date Tue Jul 30 15:48:09 EDT 2002

Contribute

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Publish

| Organization | arXiv:cond-mat/0204534 v1 24 Apr 2002. arXiv.org e-Print archive. |
| Date | 2002 |

Meta-metadata

MMCreate

Date	Tue Jul 30 15:50:34 EDT 2002
Person	BEGIN:VCARD FN:Marcia L. Zeng TITLE:Associate Professor, Information Science ORG:Kent State University, GREEN National STEME Digital Library ADR;WORK:204 Moulton Hall, Kent, OH 44242 TEL;WORK:330-672-1796 EMAIL;INTERNET:mzeng@kent.edu URL:appling.kent.edu/NSDLGreen END:VCARD
Organization	Kent State University Green's Functions Research and Education Enhancement Network National Science Foundation DUE 0121545 National Science, Technology, Engineering, and Mathematics Education Digital Library
Scheme	IEEE LOM 2.0

Technical

Format	application/pdf
LocSpec	http://xxx.arxiv.cornell.edu/PS_cache/cond-mat/pdf/0204/0204534.pdf
LocSpec	../ResourceFiles/Green-2002-07-30-43-Resource-hamiltongreen.pdf
OSRequirements	
OperatingSystem	MS-Windows

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