

Abstract
References

ADVERTISEMENT

EVENTS YOU MAY BE INTERESTED IN

Gordon Research Conference:
Photoionization & Photodetachment
23–28 Feb 2014
Galveston, United States

Physics with large arrays of novel
scintillators
15–16 Jan 2014
Dublin 1, Ireland

XIth Quark Confinement and Hadron
Spectrum
8–12 Sep 2014
Saint Petersburg, Russian Federation

[More events >](#)

Powered by GLOBALEVENTSLIST



Annals of Physics

Volume 139, Issue 1, March 1982, Pages 68–82



A variational approach to dense relativistic matter using functional techniques

Pervez Hoodbhoy

Department of Physics, Quaid-e-Azam University, Islamabad, Pakistan

Choose an option to locate/access this article:

Check if you have access
through your login
credentials or your institution

Abstract

The zero temperature ground state of an infinite system of baryons interacting with each other through the exchange of scalar and vector mesons is studied by means of a variational principle appropriate to relativistic systems. A trial wavefunctional is constructed which represents the fluctuation of the quantum fields about their mean values. The renormalized ground-state energy is subsequently calculated at a point where the vacuum is stable. Renormalization to all orders in the strong coupling constants is thereby obtained. A simple expression for the binding energy per particle with three free parameters is found. These parameters are fixed by fitting to the observed nucleon mass and to the values of the fermi momentum and binding energy of nuclear matter. A prediction for the binding energy and equation of state of nuclear and neutron matter is obtained for densities far away from the density of normal nuclei. Finally, a comparison is made with results obtained by other authors who have used classical-perturbative methods for the same system.

There are no figures or tables for this document.

Copyright © 1982 Published by Elsevier Inc.

About ScienceDirect
Information for advertisers

About Elsevier
Terms and conditions

Contact and support
Privacy policy

Copyright © 2013 Elsevier B.V. except certain content provided by third parties. ScienceDirect® is a registered trademark of Elsevier B.V.

Cookies are used by this site. To decline or learn more, visit our [Cookies page](#)

[http://dx.doi.org/10.1016/0003-4916\(82\)90006-9](http://dx.doi.org/10.1016/0003-4916(82)90006-9)

[Get rights and content](#)

Bibliographic information

Citing and recommended articles

Recommended articles

Vacuum energy in the bag model
1986, Annals of Physics
[Show more information](#)

Excitation energies in the energy density method
1980, Nuclear Physics A
[Show more information](#)

The 3He charge form factor in the hybrid model
1984, Physics Letters B
[Show more information](#)

[View more articles >](#)

Cited by (0)

This article has not been cited.

Related reference work articles

No articles found.

Applications and tools

Workspace