

# Model point-kopling dengan konstanta kopling bergantung densitas = Point-kopling model density dependent coupling constants

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## Abstrak

[<b>ABSTRAK</b><br>

Kuantisasi Lagrangian model point-coupling bergantung densitas menghasilkan

Lagrangian Hartree-Fock yang terdiri atas suku direct dan exchange.

Identitas Fierz diaplikasikan pada suku exchange agar bisa disusun bersama dengan suku direct membentuk Lagrangian efektif. Dengan menggunakan persamaan Euler-Lagrange akan didapat persamaan gerak dan massa efektif sistem.

Dari Hamiltonian sistem diperoleh energi ikat sistem per nukleon, massa efektif, tekanan dan kompresibilitas. Dari hasil yang diperoleh, kontribusi suku exchange kecil pada massa efektif nukleon materi nuklir simetrik. Namun pada keadaan lain, kontribusi yang signifikan terlihat pada energi ikat per nukleon di materi nuklir simetrik dan materi neutron, massa efektif materi neutron, dan energi ikat per nukleon pada densitas rendah dari materi neutron.

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Point-coupling model Lagrangian is quantized to obtain the Hartree-Fock

Lagrangian which contained direct and exchange terms. Fierz identity applied

to the exchange term to be rearranged together with the direct term to obtain

the effective Lagrangian. By using the Euler-Lagrange equation, we will obtain

the equation of motion and the effective mass of the system. From the Hamiltonian

will obtain the binding energy per nucleon, effective mass, pressure

and compressibility. The results show that the exchange term contribution

is small on nucleon effective mass of symmetric nuclear matter. But in the

other conditions, the significant contribution are observed on binding energy

per nucleon of asymmetric nuclear matter, neutron effective mass, and binding

energy per nucleon in asymmetric nuclear matter in low density; Point-coupling model Lagrangian is

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