

Asimetri isospin pada materi quark = Isospin asymmetry in quark matter

Ali Ikhsanul Qauli, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20368802&lokasi=lokal>

Abstrak

[ABSTRAK

Pada skripsi ini, kebergantungan persamaan keadaan materi quark terhadap parameter isospin dikaji secara teoritik. Model materi quark yang digunakan adalah pengembangan dari model CDDM (Confined Density Dependent Mass) dengan menambahkan suku interaksi isospin pada massa quark. Selanjutnya model ini disebut CIDDM (Confined Isospin Density Dependent Mass). Model CIDDM diuji dengan membandingkan relasi massa-radius bintang yang dihasilkan dengan observasi astrofisika dan hasil prediksi tekanan materi quark pada daerah nilai rapat bilangan baryon yang besar berdasarkan perhitungan pQCD. Hasil yang kami dapatkan menunjukkan bahwa model CIDDM tidak bisa menjelaskan hasil perhitungan pQCD pada daerah nilai densitas baryon yang besar tetapi cukup konsisten dengan observasi bintang kompak dengan massa dua kali massa matahari untuk set parameter DI-2500.

<hr>

<i>ABSTRACT

;In this bachelor thesis, the isospin dependence in quark matter's equation of state have been studied theoretically. The quark matter model used in this study is an extended version of CDDM model where the isospin term in quark's mass is included. Then this model is called CIDDM (Confined Isospin Density Dependence Mass). CIDDM model has been tested by comparing mass-radius relation which come from astrophysical observation and the equation of state obtained from perturbative QCD (Quantum Chromo Dynamics) calculation. We have found that CIDDM model cannot explain the equation of state from pQCD in large baryon density region but it's maximum mass prediction is quite consistent with the one from compact stars observation. Namely the pulsar's mass is about two times larger than solar mass if we use the parameter set DI-2500., In this bachelor thesis, the isospin dependence in quark matter's equation of state have been studied theoretically. The quark matter model used in this study is an extended version of CDDM model where the isospin term in quark's mass is included. Then this model is called CIDDM (Confined Isospin Density Dependence Mass). CIDDM model has been tested by comparing mass-radius relation which come from astrophysical observation and the equation of state obtained from perturbative QCD (Quantum Chromo Dynamics) calculation. We have found that CIDDM model cannot explain the equation of state from pQCD in large baryon density region but it's maximum mass prediction is quite consistent with the one from compact stars observation. Namely the pulsar's mass is about two times larger than solar mass if we use the parameter set

DI-2500.]