Objek Kompak Simetri Bola Relativistik Anisotropik Melalui Persamaan Keadaan Van Der Waals = Anisotropic Relativistic Spherical Symmetric Compact Objects Through the Van Der Waals Equation of State

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Abstrak

Pada tesis ini dipelajari objek kompak anisotropik dengan interior diisi dengan dark energy (energi gelap). Objek yang disebut anisotropik, karena tekanan radial dan tangensial di interior objek tidak sama. Untuk memodelkan keadaan energi gelap, digunakan persamaan keadaan Van der Waals dengan parameter bebas ””, “” dan “”. Perhitungan dilakukan dengan menyelesaikan persamaan Tolman-OppenheimerVolkof (TOV) dimensonless (tidak berdimensi). Di formalisme ini, radius ” ” berharga nol hingga satu. Studi yang dilakukan adalah memeriksa jangkauan dari ””, “” dan “” agar memenuhi objek yang stabil secara fisis. Kestabilan objek kompak ditinjau dari kuadrat kecepatan suara radial dan tangensial. Hasil diperoleh “ [0, 0.38]”, “ [-0.05, 0]” dan “ [-0.58, 0]”, untuk memenuhi objek yang stabil. Melalui jangkauan””, “” dan “” yang diperoleh, ditinjau profil-profil objek.

.....In this thesis, an anisotropic compact object with an interior filled with dark energy is studied. The object is called anisotropic, because the radial and tangential pressures in the interior of the object are not the same. To model the state of dark energy, the Van der Waals equation of state is used with free parameters "", "" and "". The calculation is done by solving the dimensionless Tolman-Oppenheimer-Volkof (TOV) equation. In this formalism, the radius "" has a value of zero to one. The study conducted is to examine the range of "", "" and "" to meet a physically stable object. The stability of the compact object is reviewed from the square of the radial and tangential sound speeds. The results obtained are “ [0, 0.38]”, “ [-0.05, 0]” and “ [-0.58, 0]”, to meet the stable object. Through the range of “”, “” and “” obtained, the object profiles are reviewed..