Efek Medan Listrik di Permukaan Bintang Neutron = Electric Field effect on the surface of a neutron star

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Abstrak

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Di permukaan bintang neutron, perubahan kerapatan partikel yang signi kan dapat menghasilkan separasi muatan dalam bentuk lapisan dipol listrik. Pada penelitian ini dipelajari efek medan listrik akibat lapisan tersebut terhadap properti dari bintang neutron. Untuk memodelkan kerapatan lapisan dipol listrik, kami menggunakan dua fungsi Gaussian. Pada perhitungan ini kami gunakan dua model dengan asumsi berbeda, yakni: model dengan asumsi bahwa bintang neutron hanya tersusun atas p, n, e dan serta model dengan asumsi bintang neutron tersusun dari p, n, e, dan hyperon. Hasil yang diperoleh menunjukkan bahwa massa maksimum tidak sensitif terhadap medan listrik di permukaan, tetapi radius bintang dengan massa kanonik 1:4Mb cukup sensitif terhadap medan listrik. Bintang neutron dengan hyperon bersifat lebih soft dibandingkan bintang neutron tanpa hyperon
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ABSTRACT
On the surface of a neutron star, a signi cant particle density changes can produce charge separation in the form electric dipole layer. This research studied electric eld e ect from the dipole layer on the properties of neutron star. For modeling electric dipole layer density, we use two Gaussian functions. We use two models with di erent assumptions: namely a model which assumes the neutron star is only composed of p, n, e and and a model which assumes the neutron star is composed of p, n, e, and hyperon. The result showes that the maximum mass is not sensitive to the electric elds on the surface, but the radius of star with canonical mass 1:4Mb is quite sensitive to electric elds. The neutron star with hyperon is softer than without hyperon;On the surface of a neutron star, a signi cant particle density changes can produce charge separation in the form electric dipole layer. This research studied electric eld e ect from the dipole layer on the properties of neutron star. For modeling electric dipole layer density, we use two Gaussian functions. We use two models with di erent assumptions: namely a model which assumes the neutron star is only composed of p, n, e and and a model which assumes the neutron star is composed of p, n, e, and hyperon. The result showes that the maximum mass is not sensitive to the electric elds on the surface, but the radius of star with canonical mass 1:4Mb is quite sensitive to electric elds. The neutron star with hyperon is softer than without hyperon, On the surface of a neutron star, a signi cant particle density changes can produce charge separation in the form electric dipole layer. This research studied electric

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