

Abstract Submitted
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Energetically favorable electrodynamical configuration for neutron stars SHE-SHENG XUE, ICRA.Net, VLADIMIR POPOV, MICHAEL RONDONO, REMO RUFFINI — We use the relativistic Thomas Fermi equation and energetic equation of beta equilibrium to describe degenerate neutrons, protons and electrons in neutron stars. An analytical approach are adopted to analyze these equations, implemented with the global neutrality: total proton and electron numbers are the same. We find a unique configuration of protons and electrons distributions which has an critical electric field at the surface of neutron stars. It is shown that such an electrodynamic configuration is (i) energetically stable against the Coulomb repulsion; and (ii) energetically favorable, against the configuration which obeys the local neutrality: proton and electron number-densities are the same in neutron stars.

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