

Thermal Dynamics Behavior of Protoneutron Star Matter

CHEN Wei,¹ WEN De-Hua,² LIU Guo-Tao,² WANG Xian-Ju,² and LIU Liang-Gang²

¹ Department of Physics, Jinan University, Guangzhou 510632, China

² Department of Physics, Zhongshan University, Guangzhou 510275, China

(Received: 2002-7-15; Revised:)

Abstract: In the relativistic σ - ω model, including the vacuum fluctuation of nucleons and σ mesons, the effect of the temperature to the composition and equation of state of protoneutron star matter, nucleon effective mass and chemical potential of neutrons and electrons are studied. We find that the influence of the temperature on the equation of state of protoneutron star matter is indeed small, however, its influence on the composition of protoneutron star, which will contribute to the evolution of protoneutron star, cannot be neglected in low density region. The chemical potentials of neutrons and electrons also depend on the temperature in almost the same density region.

PACS: 26.60.+c, 21.65.+f, 97.60.jd

Key words: protoneutron star, thermal dynamics

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