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Hot Quark Matter at Neutrino Confinement in the Framework of the local SU(3) Nambu - Jona-Lasinio Model

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The thermodynamic characteristics of hot β -equilibrium electrically neutral three-flavor quark matter at neutrino confinement are investigated. For the thermodynamic description of such a quark-lepton system, the local SU(3) Nambu-Jona-Lasinio (NJL) model is used, in which also takes into account the 't Hooft interaction, leading to the quark flavor mixing effect. The energy density ϵ and pressure P of quark matter are numerically determined for different values of the baryon number density in the range n_B $[0.02 \div 1.8]$ fm⁻³ and temperatures in the range T $[0 \div 100]$ MeV. The results obtained are compared with the results of cold quark matter calculated within the framework of the same model, but under the assumption that all neutrinos have already left the system. The dependence of the contribution of individual quark flavors to the baryon charge of the system at different temperatures is discussed. Both isothermal and adiabatic speeds of sound in hot quark matter are determined depending on the baryon number density.

Author: ALAVERDYAN, Grigor (Yerevan State University)

Co-author: HAJYAN, Gevorg (Yerevan State University)

Presenter: ALAVERDYAN, Grigor (Yerevan State University)