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Numerical simulation of the behavior of particles in hot and dense nuclear matter

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In this paper we study the properties of particles in hot and dense nuclear matter within the framework of the SU(3) Nambu - Jona - Lasinio model. To calculate the mass and width of diquars (scalar, pseudo scalar, vector, axial vector) as functions of temperature, the Bethe-Salpeter equation is presented as a system of two equations. To solve a self-consistent system of the nonlinear integral equations, a FORTRAN code is written. The behavior of the diquark mass at finite temperature was investigated. The obtained results are used to describe baryons as quark-diquark pairs.

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