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Charged pion condensation in chiral asymmetric dense quark matter in the framework of a (1+1) NJL_2 model

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We investigate the phase structure of a (1+1)-dimensional schematic quark model with four-quark interaction and in the presence of baryon (μB), isospin (μI) and chiral isospin (μI5) chemical potentials. It is established that in the large-Nc limit (Nc is the number of colored quarks) there exists a duality correspondence between the chiral symmetry breaking phase and the charged pion condensation (PC) one. The role and influence of this property on the phase structure of the model are studied. It is also shown that the chemical potential μI5 promotes the appearance of the charged PC phase with nonzero baryon density. Spatially inhomogeneous chiral density wave (for chiral condensate) and single wave (for charged pion condensate) approaches are also used.

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