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A question concerning phase transitions in a pion system of particles and antiparticles

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The thermodynamic properties of an interacting pion system composed of particles and antiparticles are studied at finite high temperatures and densities, which may arise in relativistic collisions of individual particles and entire atomic nuclei. Systems containing both particles and antiparticles are considered under the condition of isospin (charge) density conservation. The results are obtained within a Skyrme-like mean-field thermodynamic model. The mean field depends on the total particle density and includes both attractive and repulsive components. Phase diagrams are constructed, illustrating in particular the effect of the attractive interaction on the phase structure of the system.

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