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On the possibility of π^0 condensation and magnetization in freely interpenetrating nuclei

Conditions are found, at which in the nuclear matter there may appear a spatially nonuniform p wave π^0 condensate supplemented by a spatially varying spontaneous magnetization. The pion-nucleon interaction and the anomaly contributions to the magnetization are taken into account. Response of the system on the external magnetic field is also considered. Then the model of nonoverlapped nucleon Fermi spheres is employed. Arguments are given in favor of the possibility of the occurrence of the π^0 -condensation and a spatially varying magnetization as well as effects of pronounced anisotropic pion fluctuations at finite pion momentum in peripheral heavy-ion collisions. Relevant effects such as response on the rotation, charged pion condensation and other

are discussed.

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