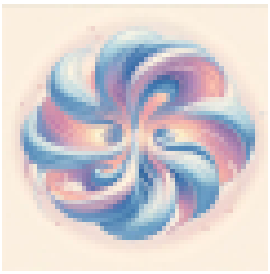

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Quark spin correlations in relativistic heavy ion collisions (online)

lundi 22 juillet 2024 15:30 (30 minutes)

The observation of the vector meson's global spin alignment by the STAR Collaboration reveals that strong spin correlations may exist for quarks and antiquarks in relativistic heavy-ion collisions in the normal direction of the reaction plane. We propose a systematic method to describe such correlations in the quark matter. The correlations can be classified as local and long range types. We show in particular that the effective quark spin correlations contain the genuine spin correlations originated directly from the dynamical process as well as those induced by averaging over other degrees of freedom. We also show that such correlations can be studied by measuring the vector meson's spin density matrix and hyperon-hyperon and hyperon-anti-hyperon spin correlations. We present the relationships between these measurable quantities and spin correlations of quarks and antiquarks.

Auteur principal: WANG, Qun (University of Science and Technology of China)

Co-auteur: Prof. WANG, Xin-Nian (Lawrence Berkeley Lab)

Orateur: WANG, Qun (University of Science and Technology of China)

Classification de Session: Phase diagram