

Global and local polarization of hyperons in heavy-ion collisions

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The matter created in non-central heavy-ion collisions is expected to have an initial orbital angular momentum carried by two colliding nuclei. Such an angular momentum would be transferred to the global polarization due to the spin-orbit coupling. The STAR Collaboration observed global polarization of Λ hyperons in Au+Au collisions in a wide range of collision energy $\sqrt{s_{NN}} = 3-200$ GeV, indicating a thermal vorticity of the system. Also, non-trivial collective velocity field due to anisotropic flow leads to vorticity, and therefore polarization, along the beam direction. Unlike the case of the global polarization, theoretical models based on thermal vorticity fail to describe the local polarization in its magnitude and sign, which is under intense discussion. In this talk, recent results on global and local polarization of hyperons (Λ , Ξ , Ω) in heavy-ion collisions will be reviewed.

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