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The 92nd HENPIC seminar by Dr. Shuai Liu (刘帅), Institute of Modern Physics, CAS (中国科学院近代物理所)，Feb.20, 2020, Thursday, 10:30am (Beijing time)

Title: Spin polarizations in a covariant angular momentum conserved chiral transport model

Abstract:
Using a covariant and total angular momentum conserved chiral transport model, which takes into account the spin-orbit interactions of chiral fermions in their scatterings via the anomalous side jump effect, we study the quark spin polarizations in quark matter. For a system of rotating and unpolarized massless quarks in an expanding box, we find that the side jump effect can dynamically polarize the quark spin with the final quark spin polarization consistent with that of thermally equilibrated massless quarks in a self-consistent vorticity field. For the quark matter produced in non-central relativistic heavy ion collisions, we find that both the quark local spin polarizations in the direction perpendicular to the reaction plane and along the longitudinal beam direction show an azimuthal angle dependence in the transverse plane similar to those observed in experiments for Lambda hyperons.

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