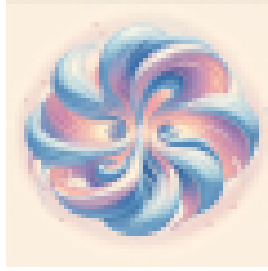


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Dynamical generation of canonical spin potential in hot QCD

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Spin hydrodynamics relies on the non-unique definition of the spin tensor, representing the distribution of spin degrees of freedom, but different spin tensors lead to different physical results. In general, this pseudogauge symmetry represents a significant theoretical ambiguity in relativistic out-of-equilibrium statistical mechanics. This ambiguity may be resolved by fundamental quantum field theory. In this talk, we prove the equivalence between the finite-temperature NJL model and the covariant statistical operator of a free Dirac field with a spin potential coupled to the canonical spin tensor. The spin potential is induced by a mean axial vector field, expected to be generated in heavy-ion collisions through the chiral separation and axial vortical effects. Our description favors the canonical pseudogauge.

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