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Modelling particle polarization with spin hydrodynamics

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Since the first positive measurement of the Λ-hyperon global spin polarization in heavy-ion collisions by STAR collaboration in 2017, the understanding of the nature of this phenomenon is one of the most intriguing challenges for the heavy-ion physics community. As relativistic fluid dynamics celebrates multiple successes in describing collective dynamics of the QCD matter in such reactions, the natural question arises whether the spin dynamics can also be modeled in such a framework. In this talk, we will discuss the theoretical aspects of the relativistic spin hydrodynamics framework which is based on the de Groot - van Leeuwen - van Weert forms of energy-momentum and spin tensors. We will also show how this formalism can be used to determine observables describing the spin polarization of particles measured in the experiment.

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