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Local equilibrium and Lambda polarization in high energy heavy ion collisions

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The polarization of the Λ hyperon has become an important probe of the Quark-Gluon Plasma produced in relativistic heavy-ion collisions. Recently, it has been found that polarization receives a substantial contribution from a local equilibrium term proportional to the symmetric derivative of the four-temperature vector, the thermal shear tensor. We show that, at very high energies, this term can restore the agreement between the experimental measurements and the predictions of the hydrodynamic model, provided that the hadronization hypersurface is isothermal. We review the theoretical derivation of this new term, discuss numerical computations at RHIC and LHC energies, and compare them with the experimental data. We also present the effect of feed-down corrections.

Based on refs. [1,2,3]

[1] Becattini, Buzzegoli, Palermo, Phys.Lett.B 820 (2021) 136519

[2] Becattini, Buzzegoli, Palermo, Inghirami, Karpenko, Phys. Rev. Lett. 127 (2021) 272302

[3] Karpenko, Palermo, Becattini, in preparation.

Present via

Offline

Primary authors: PALERMO, Andrea (INFN Florence, Florence University, Goethe University Frankfurt); PALERMO, Andrea

Co-authors: BUZZEGOLI, Matteo (INFN); BECATTINI, Francesco (University of Florence); KARPENKO, Iurii (FNSPE CTU in Prague); Dr INGHIRAMI, Gabriele

Presenters: PALERMO, Andrea (INFN Florence, Florence University, Goethe University Frankfurt); PALERMO, Andrea

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