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Polarization of vector mesons in non-equilibrium hydrodynamics with spin

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We argue that spin alignment of hadrons of spin 1 and higher provide a unique window into the study of hydrodynamics with spin, because it is capable to probe non-equilibrium between spin density and vorticity. This happens because most of the full 3×3 density matrix is in principle accessible experimentally, and non-zero off-diagonal matrix elements can be directly linked to such non-equilibrium.

We illustrate this using a coalescence model for light vector mesons [1] as well as a potential model for quarkonia, and compare our calculations to experimental data [2].

[1] Kayman J. Gonçalves, Giorgio Torrieri

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[2] Paulo de Moura, Kayman J. Gonçalves, Giorgio Torrieri 2305.02428

Category

Theory

Collaboration (if applicable)

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