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Spin 1 mesons as a probe for vorticity-polarization non-equilibrium

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It is now clear, on a theoretical level, that spin polarization can not be in perfect local equilibrium with vorticity during the quark-gluon plasma evolution. Phenomenological consequences of this are however so far not clear. In this talk we argue that spin one mesons (and higher spin particles) are ideal probes of non-equilibrium between vorticity and polarization, because their density matrix carries, potentially, information unambiguously related to local equilibrium.

We illustrate how light mesons (modeled via coalescence), quarkonia (modeled via potential models) and virtual photons (detectable via dilepton pairs) could be used to probe the interplay between vorticity and polarization in the system.

Based on 2305.02985 2104.12941 and ongoing work

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