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Holographic spin alignment of J/Ψ in anisotropic plasma

Using the holographic model, we study mass spectrum and spin alignment for J/Ψ mesons propagating through an anisotropic plasma. Our results show that the invariant mass of J/Ψ decreases, while its decay width increases with increasing J/Ψ's momentum or increasing temperature. We observe that longitudinal and transverse modes have different mass spectra due to the broken radial symmetry in the rest frame of J/Ψ, leading to different particle number densities that can be measured through the spin alignment. We show that the spin alignment in the helicity frame is significantly smaller than 1/3, which is qualitatively consistent with the LHC data. The deviation from 1/3 demonstrates a non-monotonic dependence on the meson's momentum. Additionally, we have examined the impact of an anisotropic background, which is expected to be closer to the real QGP matter.

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