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Polarization and magnetic field in heavy ion collisions

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We investigate the rotational Brownian motion of heavy quarks in a QCD medium, focusing on its connection to the polarization of open heavy-flavor hadrons. Our analysis indicates that the transverse momentum dependence of heavy-quark polarization can serve as a distinctive probe of the intense initial magnetic field generated in off-central relativistic heavy-ion collisions. Furthermore, we propose a novel application of this strong magnetic field produced in relativistic heavy-ion collision physics.

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