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Heavy Quark Diffusion Dynamics in Quark-Gluon Plasma under Strong Magnetic Fields

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We discuss heavy-quark dynamics in the quark-gluon plasma under a strong magnetic field induced by colliding nuclei. By the use of the diagrammatic resummation techniques for Hard Thermal Loop and the external magnetic field, we show analytic results of heavy-quark diffusion constant and drag force which become anisotropic due to the preferred spatial orientation in the magnetic field. We argue that the anisotropic diffusion constant gives rise to an enhancement/suppression of the heavy-quark elliptic flow depending on the transverse momentum.

K. Fukushima, K. Hattori, H.-U. Yee, and Y. Yin, “Heavy Quark Diffusion in Strong Magnetic Fields at Weak Coupling and Implications for Elliptic Flow,” Phys. Rev. D 93 (2016) 074028 [arXiv:1512.03689 [hep-ph]].

Summary

Presentation type

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Author: HATTORI, Koichi (Fudan University; RIKEN-BNL Research Center)

Presenter: HATTORI, Koichi (Fudan University; RIKEN-BNL Research Center)

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