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Photon radiation induced by rescattering in strong-interacting medium with a magnetic field

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The photon radiation induced by rescattering in a magnetized medium is investigated in relativistic heavy-ion collisions. Within the high-energy limit, the photon emission rate and the associated electromagnetic energy loss are derived using the Gyulassy-Levai-Vitev formalism at first order in opacity, for a quark jet propagating a quark-gluon plasma under a background magnetic field. Quantitative analysis shows a slight suppression of the overall photon radiation over a broad range of jet energies in this process. This reduction in photon yield consequently leads to a moderate decrease in the electromagnetic energy loss of the jet. Our results contribute to a better understanding of the electromagnetic properties of strongly interacting matter in high-energy nucleus-nucleus collisions and motivate experimental comparison of photon yields from quark-gluon plasma with similar properties but distinct magnetic field strengths.

Primary authors: ZHANG, Yue (Central China Normal University); ZHANG, Han-Zhong

Presenter: ZHANG, Yue (Central China Normal University)

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