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Heavy flavor production under a strong magnetic field

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The strong magnetic field created in high energy nuclear collisions will affect the dynamical processes in the QCD medium, especially the heavy quark production that happens in the initial stage of the collisions. In this talk, I will discuss the heavy quark production cross section for the elementary process $gg \rightarrow Q\bar{Q}$ at leading order and the corresponding transverse momentum distribution in nucleus-nucleus collisions in both strong magnetic field and weak field limit. The main difference between these two extremes is whether dimension reduction of quark phase space happens and this will contain the production concentrated in a very narrow energy region above the threshold. Since the translation invariance is broken, the production becomes anisotropic in magnetic field. It would be interesting to observe these effects in the experiment.

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