

Quark-gluon plasma in magnetic fields

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An impact of the electromagnetic field in the presence of strong interactions is usually not considered, as it typically plays a negligible role. However, the electromagnetic field becomes visible when its magnitude is characteristic for strong interactions. It is not accessible experimentally to create such a strong magnetic field. Nevertheless, it is expected that a field of a very large amplitude can briefly arise in relativistic heavy ion collisions, and be sustained by induced electric currents in the quark-gluon plasma created during the collision of ions. The project aims to analyze the electromagnetic field generated in relativistic heavy ion collisions. The research project will include a discussion of aspects that have not been analyzed so far, such as formulating the problem of generating an electromagnetic field as an initial value problem, and analyzing the behaviour of the quark-gluon plasma in such a field. The main goal is to take into account non-equilibrium effects by properly setting the initial conditions.

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