Beitrag ID: **187** Typ: **Poster**

Electromagnetic fields evolution and heavy flavor probes in relativistic heavy ion collisions

Dienstag, 28. März 2023 18:15 (2 Stunden)

The electromagnetic fields produced by non-central heavy ion collisions are extremely powerful and give rise to a plethora of fascinating subjects in the strongly interacting matter. Their evolution is a significant and unresolved issue.
In this talk, firstly, I will show the electromagnetic evolution in the pre-equilibrium stages which is a gluon-dominated and far-from-equilibrium system after the collisions. Quarks and antiquarks will be produced gradually via inelastic collisions. We find the induced magnetic field is very weak in this stage due to the lacking of quarks.
Next, I will present the new effect we proposed which is called the incomplete electromagnetic response of hot QCD matter.
We examine the validity of Ohm's law and find that the induced electric current increases from zero and relaxes towards the value from Ohm's law. The lower-than-expected electric current significantly suppresses the induced magnetic field and makes the electromagnetic response incomplete. And leads to a strong suppression of the magnetic field.
Considering both these two effects, the magnetic field will decay faster in heavy ion collisions, and which magnitude is much weaker than expected.
Finally, I will show our study on the charmonium dissociation under electromagnetic fields, which can be a sensitive probe for detecting the short-lived electromagnetic fields in heavy-ion collisions.

Experiment/Theory

Theory/Phenomenology

Affiliation

Subatech

Hauptautor: ZHAO, Jiaxing (SUBATECH)

Co-Autoren: Dr. WANG, Zeyan (Tsinghua University); Herr JIN, Hu (Tsinghua University); Dr. SHI, Shuzhe (Stony Brook University); Prof. XU, Zhe (Tsinghua University); Prof. GREINER, Carsten (Johann Wolfgang Goethe-Universitat Frankfurt); Prof. ZHUANG, Pengfei (Tsinghua University)

Vortragende(r): ZHAO, Jiaxing (SUBATECH)

Sitzung Einordnung: Poster Session

Track Klassifizierung: Electromagnetic and electroweak probes