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## Dileptons as Probe of the Preequilibrium: Theory and Observables

Leading-order pQCD calculations have shown dileptons to be a promising signature of the preequilibrium in ultrarelativistic heavy-ion collisions. This work extends the analysis of dileptons as a probe of chemical equilibration to next-to-leading order accuracy. Since the system is far-from-equilibrium, we employ the real-time formalism of quantum field theory to perform this kind of calculation for the first time. This formalism allows us to understand in isolation the contributions from the vacuum and the medium, as well as self energy corrections, vertex corrections and corrections from real processes with gluons in the initial or final state. The results provide a prediction to motivate the corresponding measurements, which promise to improve our phenomenological understanding of the pre-equilibrium chemistry of the QGP.

### Category

Theory

### Collaboration (if applicable)

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