

Chiral fermions in quantum kinetic approach

Tuesday, 28 July 2015 10:00 (30 minutes)

Kinetic theory is an important tool to describe these phenomena in phase space of chiral fermions. It has been shown that the CME, CVE and Covariant Chiral Kinetic Equation (CCKE) can be derived in quantum kinetic theory from the Wigner function in 4-dimensions (4D) in external electromagnetic fields. The magnetic moment and spin-vorticity coupling of chiral fermions are shown to emerge in 4-dimensional Wigner functions. In linear response theory with space-time varying electromagnetic fields, the parity-odd part of the electric conductivity can also be derived which reproduces results of the one-loop and the hard-thermal or hard-dense loop. All these properties show that the 4-dimensional Wigner functions capture comprehensive aspects of physics for chiral fermions in electromagnetic fields.

Primary author: Prof. WANG, Qun (University of Science and Technology of China)

Presenter: Prof. WANG, Qun (University of Science and Technology of China)

Session Classification: QCD at High Temperature and Density & Phase Diagram