Contribution ID: **63** Type: **Talk**

Chiral Magnetic Conductivity in an interacting lattice model of a parity-breaking Weyl semimetal

Friday, 17 July 2015 14:40 (20 minutes)

With the recent experimental realization of Dirac and Weyl semimetals it has become possible to study the Chiral Magnetic Effect (CME) in clean table-top experiments. We present results of a mean-field study of the static Chiral Magnetic Conductivity (sCMC) in a simple lattice model of a parity-breaking Weyl semimetal. Our model is given by the lattice Wilson-Dirac Hamiltonian with on-site repulsive interaction and a constant chiral chemical potential term. The value of the sCMC for free Dirac fermions is well known and possible corrections due to fermion-interactions are often neglected. We study the model in the parameter space of bare Wilson-Dirac mass, inter-fermion interaction strength and bare chiral chemical potential and find that on-site repulsive interactions affect the sCMC almost exclusively through the enhancement of the renormalized chiral chemical potential. Non-trivial corrections to the sCMC due to inter-fermion interactions seem to be irrelevant in practice, since they become important only in a phase where the CME response is strongly suppressed by a large gap in the energy spectrum.

Primary authors: Mr PUHR, Matthias (Regensburg University); Dr BUIVIDOVICH, Pavel (Regensburg University); Mr VALGUSHEV, Semen (University of Regensburg)

Presenter: Mr PUHR, Matthias (Regensburg University)

Session Classification: Applications Beyond QCD

Track Classification: Applications Beyond QCD