Thermoelectric coefficients in the limits of strong and weak magnetic field

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Introduction to the Poster

- Finite quark chemical potential coupled with a temperature gradient in the hot QCD medium can lead to Thermoelectric phenomena: Seebeck and Nernst effects.

- In the limit of very high magnetic field, the LLL approximation leads to vanishing transverse current, thus, zero Nernst coefficient.

- In the weak magnetic field limit, both the Seebeck and Nernst coefficients are non-zero.

$$\begin{pmatrix} E_x \\ E_y \end{pmatrix} = \begin{pmatrix} S & N|\boldsymbol{B}| \\ -N|\boldsymbol{B}| & S \end{pmatrix} \begin{pmatrix} \frac{\partial T}{\partial x} \\ \frac{\partial T}{\partial y} \end{pmatrix}.$$

- The quasiparticle masses of left and right handed quarks are different in the weak B limit. This leads to a constraint in the values of B and T that can be used.