Nernst Signal Oscillations Induced by Edge Currents in the Corbino Geometry

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We study the manifestation of the Nernst effect in the Corbino disk subjected to the external magnetic field normal to the plane of the disk and to the radial temperature gradient. We demonstrate that the magnetic field measured in the center of the disk strongly oscillates as a function of the external field and depends on the temperature difference. These oscillations are due to the chemical potential oscillations of the de Haas van Alphen type. Dirac fermions and 2D electrons with a parabolic spectrum are characterized by oscillations of different phase and frequency. We predict qualitatively different power dependencies of the magnitude of Nernst signal on the chemical potential for normal and Dirac carriers. Namely, for normal carriers this dependence is quadratic, while for the Dirac ones it is cubic.