PS16

Diamagnetism and transport phenomena in two-dimensional Dirac fermions in weak-magnetic field

Masaaki Nakamura

Department of Applied Physics, Faculty of Science,
Tokyo University of Science,
Kagurazaka, Shinjuku-ku, Tokyo 162-8601 Japan

Two dimensional Dirac fermion is an important model to describe 2D materials with linear dispersion relation, such as graphene (which is a single layer graphite). We discuss the magnetic susceptibility and transport coefficients including Hall conductivity in the weak-magnetic field formalism, and the relation between these results with those obtained in the finite-magnetic field formalism where the Landau quantization is essential. We also apply these arguments to the multilayer graphene systems and systems described by deformed linear dispersion relations.