Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Theory of transport property of density wave phases in three-dimensional metals and semimetals under high magnetic field XIAO-TIAN ZHANG, RYUICHI SHINDOU, International center for Quantum Materials, Peking University — Three-dimensional (3D) metals/semimetals under magnetic field have an instability toward density wave (DW) orderings. An effective boson model for the DW phases takes forms of XY models with/without Potts terms. A conductivity is calculated in the DW phases with disorders within Born approximation. A single-particle imaginary-time Green function is identified with a partition function of 3D XY models in the presence of pairs of magnetic monopoles. Using this relation, electronic spectral function is calculated near the DW phase transition by duality mapping. The calculated result shows the absence of well-defined single-particle excitations in the DW/normal phases near the transition. Based on this observation, we discuss a temperature-dependence of an in-plane conductance due to chiral surface Fermi arc states.

Xiaotian Zhang
Peking Univ

Date submitted: 11 Nov 2016 Electronic form version 1.4