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Magnetothermopower and Nernst effect of Unconventional charge density waves

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Unconventional density wave (UDW) has been speculated as a possible electronic ground state in excitonic insulator in 1968[1]. Recent surge of interest in UDW is partly due to the proposal that the pseudogap phase in high T_c cuprate superconductors is d-wave density wave (d-DW)[2].

Here we review our recent works on UDW within the framework of mean field theory[3]. In particular we have shown that many properties of the low temperature phase (LTP) in α -(BEDT-TTF)₂MHg(SCN)₄ with M=K, Rb and Tl are well characterized in terms of unconventional charge density wave (UCDW)[4]. In this identification the Landau quantization of the quasiparticle motion in a magnetic field (the Nernst effect[5]) plays the crucial role. Indeed the angular dependent magnetoresistance and the Nernst effect are two hallmarks of UDW.

References

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