ICTS Seminar

Title : Magnus Nernst and thermal Hall effect

Speaker : Amit Agarwal (Indian Institute of Technology, Kanpur)

Date : Tuesday, 25 August 2020

Time : 03:30 pm (IST)

Abstract : Motivated by the recent prediction of the Magnus Hall effect in systems with broken inversion symmetry, in this paper we study the Magnus Nernst effect and the Magnus thermal Hall effect. In presence of an in-built electric field, the self rotating wave-packets of electrons with finite Berry curvature generate a Magnus velocity perpendicular to both. This anomalous Magnus velocity gives rise to the Magnus Hall transport which manifests in all four electro-thermal transport coefficients. In this paper, we demonstrate the existence of the Magnus Nernst and Magnus thermal Hall effect in monolayer WTe_2 and gapped bilayer graphene, using the semiclassical Boltzmann formalism. We show that the Magnus velocity can also give rise to Magnus valley Hall effect in gapped graphene. Magnus velocity can be useful for experimentally probing the Berry curvature, and design of novel electrical and electro-thermal devices (arXiv:2007.12641).

Online seminar : Please click on the below link to join the Zoom meeting
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