Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **17** Type: **Oral (Non-Student) / Orale (non-étudiant(e))**

Magneto-Thermal Conductivity Oscillations in Spin-Orbit-Coupled Nodal Superconductors

Monday 7 June 2021 12:50 (3 minutes)

The symmetries of unconventional superconductors may be classified by the locations of their gap nodes. Recently, the role of spin-orbit coupling (SOC) has become important, as sufficiently strong SOC generates novel mixed-parity superconductivity. In this talk, I show that the nodal structure of unconventional superconductors may be determined by angle-dependent magneto-thermal conductivity measurements, provided the SOC is larger than the quasiparticle scattering rate. This effect is complementary to vortex-induced magneto-thermal oscillations identified previously, and is dominant in strongly anisotropic materials. As an application, I present results for the magneto-thermal conductivity of the "Rashba bilayer" $YBa_2Cu_3O_{6.5}$, which possesses a so-called "hidden spin-orbit coupling." We find that the SOC endows κ_{xx}/T with a characteristic field-angle dependence that should be easily observed experimentally.

Authors: ATKINSON, Bill (Trent University); Dr KAMPF, Arno (Augsburg University)

Presenter: ATKINSON, Bill (Trent University)

Session Classification: M2-8 Contributed Talks I (DCMMP) / Conférences soumises I (DPMCM)

Track Classification: Condensed Matter and Materials Physics / Physique de la matière condensée et matériaux (DCMMP-DPMCM)