

SEMINAR ON MAGNETISM AND SUPERCONDUCTIVITY

We kindly inform You that on **Wednesday**

November 29th at 10:00

there will be an **on-line seminar (link is provided on the IP PAS website),**

where

dr Orest Pavlosiuk

(Institute of Low Temperature and Structure Research, Polish Academy of Sciences)

will deliver a lecture on:

“Electronic structure and quantum oscillations in type-II Dirac semimetals MoSi₂ and WSi₂”

Thorough investigations of electronic structure are crucial for discovering new topological materials and understanding their electron transport properties. Here, we discuss the electronic structure of two disilicides, WSi₂ and MoSi₂, revealing type-II Dirac states and the Fermi surface topology of both materials [1]. An excellent agreement was found between the results obtained from first-principles calculations and the experimental results obtained from the analysis of quantum oscillation phenomena. Additionally, the analysis of Shubnikov-de Haas oscillations uncovered the occurrence of the Shoenberg effect and the spin-zero effect. We observed oscillations of magnetostriction in MoSi₂ and confirmed that they can be a comprehensive technique for mapping Fermi surfaces in semimetals. The magnetotransport properties of both disilicides can be understood in the scope of nearly perfect carrier compensation, and remarkably large anisotropic magnetoresistance can be elucidated by considering the anisotropic Fermi surface. The future directions of the research on WSi₂, MoSi₂ and isostructural materials is also discussed.

[1] O. Pavlosiuk, P. W. Swatek, J.-P. Wang, P. Wiśniewski and D. Kaczorowski, „*Giant magnetoresistance, Fermi-surface topology, Shoenberg effect, and vanishing quantum oscillations in the type-II Dirac semimetal candidates MoSi₂ and WSi₂*”, *Phys. Rev. B* 105, 075141 (2022).

Seminar will be delivered in Polish.

We sincerely invite You

Roman Puźniak / Andrzej Szewczyk / Henryk Szymczak