

SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **środę**

27 stycznia 2021 r., o godz.10:00

odbędzie się seminarium **on-line (link podany jest na stronie IF PAN)**,
na którym

Prof. dr hab. Dariusz Kaczorowski

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wyłosi referat na temat:

**“Dirac states in Pd-Bi superconductors: on the hunt for
Majorana modes”**

Topological superconductor (TSC) hosting Majorana bound states has been established as a milestone that might shift our scientific trajectory from fundamental research to practical applications in topological quantum computing. Recently, superconducting Pd-Bi binaries, due to their inherently large spin-orbit coupling strength, have attracted much attention as a possible platform for realization of the TSC phase. Here, we discuss the results of our comprehensive studies on the electronic structures of two such phases, namely PdBi and α -PdBi₂, carried out by means of high-resolution angle- and spin-resolved photoemission spectroscopy, electrical transport and thermodynamic properties measurements, and band structure calculations [1-3]. In both materials, distinct Dirac states were revealed well below the chemical potential, which negated the possibility of obtaining TCS without proper tuning, e.g., by electrical gating. In the case of α -PdBi₂, numerous surface Rashba states were found in the vicinity of the Fermi energy, which might be utilized to realize Majorana fermions.

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- [1] M. Neupane, et al., Nat. Comm. 7, 13315 (2016).
- [2] K. Dimitri, et al., Phys. Rev. B 97, 144514 (2018).
- [3] J. Klotz, et al., Phys. Rev. B 101, 235139 (2020).

Serdecznie zapraszamy

Roman Puźniak
Andrzej Szewczyk
Henryk Szymczak