SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **środę**

12 maja 2021 r., o godz.10:00

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

na którym

Prof. Dr. A. de Visser

(Van der Waals-Zeeman Institute, University of Amsterdam, Science Park 904, 1098 XH Amsterdam, The Netherlands)

wygłosi referat na temat:

"Nematic Superconductivity in Topological Materials"

Topological insulators have generated a wide research interest, because they offer access to novel quantum states with unprecedented properties. Most interestingly, the concept of topological insulators can be transferred to superconductors, where the superconducting gap plays the role of the band gap of the insulator. Topological superconductors are predicted to have an exotic Cooper-pair state in the bulk *and* gapless Andreev bound states at the surface (Majorana modes), and therefore offer new, challenging routes to test theories of unconventional superconductivity.

In this presentation I will focus on recent developments in superconducting Bi_2Se_3-based crystals, where field-angle dependent measurements of the transport, thermal and magnetic properties have revealed a spontaneous breaking of the rotational symmetry [1,2,3]. The rotational symmetry breaking in the macroscopic superconducting properties is explained in terms of nematic superconductivity, that is associated with a two-component superconducting order parameter (E_u representation) [4]. The experimental results provide solid evidence for unconventional superconductivity with an odd-parity spin-polarized triplet Cooper-pair state (Δ_4-pairing), that was recently proposed for rhombohedral topological superconductors [5]. For an introductory review see Ref. 6.

[1] Y. Pan et al., Sci. Rep. 6, 28632 (2016).
[2] S. Yonezawa et al., Nature Phys. 13, 123 (2017).
[3] T. Asaba et al., Phys. Rev. X 7, 011009 (2017).
[4] J. Venderbos et al., Phys. Rev. B 94, 180504R (2016).
[5] L. Fu, Phys. Rev. B 90, 100509R (2014).
[6] S. Yonezawa, Condens. Matter 4, 2 (2019).

Serdecznie zapraszamy

Roman Puźniak
Andrzej Szewczyk
Henryk Szymczak