



中国科学院
固体物理研究所

学术报告(7.13,周三)

题目: Spin Hall Effect

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Abstract

Spin Hall effect (SHE) refers to the generation of transverse spin current in nonmagnetic solids by an applied electric field due to relativistic spin-orbit coupling. Spin current generation, detection and manipulation are three key elements of the emerging spintronics. Large room temperature SHE not only provides dissipationless spin current but also is used to probe spin current and to drive magneto-electronic devices with little power consumption. Recent intensive research on SHE has also led us to such topical fields as topological insulators and spin caloritronics. In this talk, I will first give an overview on SHE. This will be followed by a presentation of my own theoretical investigations on SHE, including Berry phase theory and *ab initio* relativistic band structure method, large intrinsic SHE in metals and gigantic SHE due to multi-orbital Kondo effect in gold with iron impurities.

Brief Bio

Guang-Yu Guo is a distinguished professor in NTU Physics Department. He received his B. Sc. in Physics from Xiamen University, P. R. China and owned his Ph.D. in Physics from Cambridge University, UK in 1987. He joined the NTU Physics Faculty in 1998 as a professor after working in Daresbury Laboratory, UK for eleven years as a postdoctoral researcher, higher and senior staff scientist. He also served in National Chengchi University as a chair professor and the founding director of Graduate Institute of Applied Physics during 2009-2013. He has been vigorously conducting theoretical research in condensed matter and materials physics in the past thirty years, publishing over 200 journal papers with total citations of over 5000 and H-index of ~40 (Web of Science). He has received a number of academic awards and honors including the Taiwan National Science Council Outstanding Research Awards (1998, 2004, 2009) and the Ministry of Education's 57th Academic Award (2013) and 19th National Chair Professorship (2015). He is an elected Fellow of the PSROC (2005), the APS (2005) and the Institute of Physics (UK) (2013).

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