



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

PAP SEMINAR

NTU
PHYSICS

Nonlinear Hall Effects and Their Applications

Asst. Prof. Shen LAI

Institute of Applied Physics and Materials Engineering,
University of Macau, Macau, China

Date : 12 Jun 2024 (Wednesday)
Time : 11.00am – 12.00pm
Venue : PAP Hilbert Space (SPMS-PAP-02-02)
Host : Prof. Gao Weibo



Abstract

Nonlinear Hall effects originating from Berry phase are known as intrinsic. Extrinsic nonlinear Hall effects are induced by external interference like scattering. In this report, the potential applications of intrinsic nonlinear Hall effect, such as detection of electromagnetic wave and Neel vector in antiferromagnets will be introduction. The discover of third order nonlinear Hall effect in NbIrTe₄ and recent progress in 2D semiconductor transistors will also be discussed.

Short Biography

Dr. Shen LAI achieved his Ph.D. degree in Nano Engineering from Sungkyunkwan University, Korea in 2018 and he worked as a research fellow in Nanyang Technological University, Singapore from 2018 to 2022. He is currently an assistant professor in institute of applied physics and materials engineering, University of Macau in Macau, China. He has published more than 20 articles in the field of 2D materials transport properties and devices.