

International Center for Quantum Materials, PKU

Seminar

The Hall Effects Edwin Hall Never Imagined

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The anomalous Hall effect (AHE) is one of the oldest and most prominent transport phenomena in magnetic materials. However, the microscopic mechanism of the AHE has remained unresolved for more than a century because its rich phenomenology defies standard classification, prompting conflicting claims of the dominant processess. We differentiate these processes through temperature-dependent measurements on epitaxial Fe, Ni, Co, and NixCu1-x films of varying thickness [1], [2]. The results allow an unambiguous identification of both intrinsic and extrinsic mechanisms of the anomalous Hall effect. The more recently discovered spin Hall effect (SHE) has attracted a great deal of attention because of its potential applications in spin current