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M2Or3K-03: [Invited] Diodic quantum materials

Tuesday 11 July 2023 17:15 (30 minutes)

This talk will survey recent theoretical and experimental works on intrinsic nonreciprocity of quantum materials, as manifested by direction-dependent electrical resistivity. I will highlight two types of colossal nonreciprocal transport phenomena: (1) nonlinear Hall effect leading to divergent nonreciprocity in transverse resistance; (2) superconducting diode effect leading to 100% nonreciprocity in longitudinal resistance. Applications of nonreciprocal quantum materials in terahertz electronics, energy harvesting and cryogenic computing will be discussed.

Author: FU, Liang (MIT)

Presenter: FU, Liang (MIT)

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