

Colloquium Notice

Can-Ming Hu

University of Manitoba, Canada

Unidirectional Invisibility in Cavity Magnonics

Cavity Magnonics (also known as Cavity Spintronics [1] and Spin Cavitronics) is an emerging field that studies the strong coupling between cavity photons and collective spin excitations such as magnons. It connects some of the most exciting modern physics, such as quantum information and quantum optics, with one of the oldest science on the earth, the magnetism.

So far, most studies in this new field have been focused on coherent magnon-photon coupling, which enables diverse transducing functions in quantum and spintronics systems [2]. In this talk I will introduce an intriguing dissipative magnon-photon coupling governed by a non-Hermitian Hamiltonian [3], which describes the physics of open quantum systems. It leads to level attraction [3], exceptional points [4], and nonreciprocal photon transmission [5]. This stream of research may open the avenue for developing open cavity magnonics that enables directional control of quantum and spintronics systems.

[1] C.-M. Hu, Phys. in Canada, 72, No. 2, 76 (2016); Y.P. Wang and C.-M. Hu, J. Appl. Phys. 127, 130901 (2020).

[2] D. Lachance-Quirion, et al., Appl. Phys. Express 12, 070101 (2019).

[3] M. Harder, et al., Phys. Rev. Lett., 121, 137203 (2018).

[4] D. Zhang, et al., Nat. Commun. 8, 1368 (2017).

[5] Yi-Pu Wang, et al., Phys. Rev. Lett., 123, 127202 (2019).

Monday

October 5, 2020

Starts at **12:15 pm**

Physics Conference Room, SB B326