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# Cavity Spintronics (I)

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Cavity spintronics (also known as spin cavitronics) is a newly developing, interdisciplinary field that brings together microwave and optical communities with researchers in spintronics and magnetism. The field started around 2014 when it was found that ferromagnets in cavities hybridize with both microwaves and light by light-matter interaction [1]. Since then, the emergence of cavity spintronics has attracted broad interest from groups studying quantum electrodynamics, cavity polaritons, optomechanics, superconductivity, plasmonics, and phononics. At the center stage of the topic is the physics of magnon-photon coupling: Via the quantum physics of spin-photon entanglement on the one hand and classical electrodynamic coupling on the other, magnon-photon coupling connects some of the most exciting concepts in modern physics, such as quantum information and quantum optics, with one of the oldest sciences on earth, magnetism.

This talk aims to provide an introduction to this new frontier of condensed matter physics to researchers working in magnetism, spintronics, quantum information, and microwave technologies. Recent experiments focusing on the development of new cavity-mediated techniques, such as indirect coupling of magnetic moments, distant manipulation of spin current, qubit-magnon coupling, and conversion between optical and microwave photons, will be highlighted.

[1] Can-Ming Hu, "Dawn of cavity spintronics,"https://arxiv.org/abs/1508.01966

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