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# Cavity Optomagnonics

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Recently, seminal experiments of the Nakamura group demonstrated the coherent coupling of the elementary excitation of a ferromagnet (YIG sphere) with a superconducting qubit via cavity microwave photons. Other groups performed similar experiments with optical cavities, setting up the field of cavity optomagnonics, with the main focus on quantum coherence in ferromagnets. We will give a short overview of the field and then turn to the specific problem of photon-magnon interaction. In particular, we will demonstrate how magnons influence transmission through the optical cavity, show that there is a strong asymmetry between Stokes and anti-Stokes peaks for reflected light, and discuss how light can selectively create magnons.

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