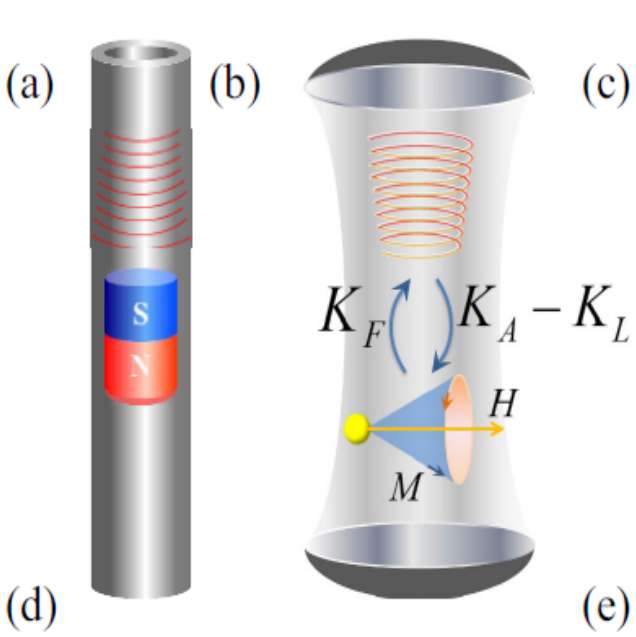
Q & A

What is the dissipative magnon-photon coupling?

Coupling with the magnon mode in a YIG sphere, the travelling waves cause the dissipation of magnon through radiating the energy to open environment, which is different from the intrinsic dissipations of magnon and photon themselves.



Picture (a) shows the descent of a magnet dropping inside a metallic pipe, which is impeded by the induced current and this induced current gives rise to a magnetic back action that opposes the change in original magnetic flux.

This is called Lenz's law.

If we replace the moving magnet with the precessional magnetization, and the pipe with a microwave cavity as shown in fig (b), then the back action of the induced current shall impede the magnetization dynamics, so that the magnons shall be coupled with the induced cavity current via the damping like Lenz effect.

This we refer to as dissipative magnon-photon coupling, in contrast to the coherent coupling effect where the cavity current drives the magnetization dynamics.

Q & A

Connection with the exceptional point.

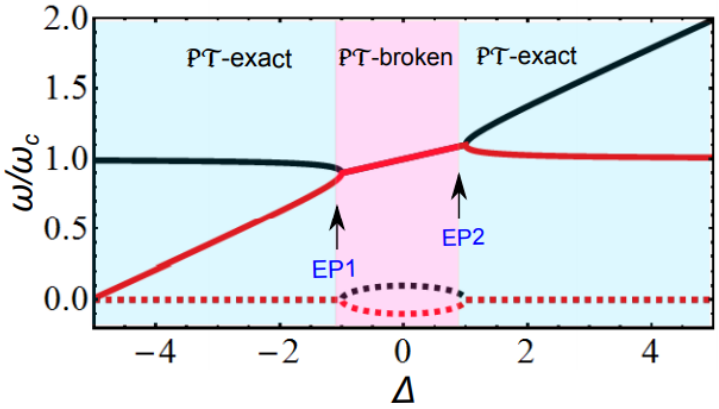


FIG. 1. Level attraction of the system described by Eq. (1) for $\Phi = \pi$. The solid and dashed lines represent the real and imaginary parts of the eigenvalues, respectively. $g = 0.1\omega_c$.

Level attraction occurs by the dissipative magnon photon coupling, I found the research 'Steady Bell state generation via magnon photon coupling' which shows the graph above. This research doesn't really focus on the EP but it seems like the dissipative magnon photon coupling and the level attraction is related to the EP and there are few ongoing researches related to the EP.