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[10p-Z08-1~10]10.2 Fundamental and exploratory device technologies for spin

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△ : Presentation by Applicant for JSAP Young Scientists Presentation Award

▲ : English Presentation

▼ : Both of Above

No Mark : None of Above

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[10p-Z08-1][The 42nd Best Review Paper Award Speech] Hybrid quantum systems based on magnonics

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Collective spin excitations in magnetic materials have been investigated through experimental techniques such as ferromagnetic resonance and inelastic nuclear scattering. More recently, they are the major platforms for magnonics and spintronics. In "quantum magnonics", based on the concepts in quantum optics and quantum information technology, we manipulate quantum states of a collective spin excitation mode and control and measure a single magnon. In this talk, we will review the experimental progress using hybrid quantum systems, in which magnons are coupled with other quantum degrees of freedom such as microwave photons in a cavity and an excitation in a superconducting qubit.