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Local excitation of ferromagnetic resonance and its spatially-resolved detection by using an open-ended radio frequency probe TOSHU AN[1], NOBUHITO OHNISHI, TOYOAKI EGUCHI, YUKIO HASEGAWA, The University of Tokyo, ISSP — A local excitation of ferromagnetic resonance (FMR) and its detection were performed by using an open-ended radio frequency (RF) probe demonstrating the potential of the local probe for spatially resolved FMR microscopy. The RF probe is composed of a coaxial cable transmitting broadband RF waves over 10 GHz and a sharp tip attached to its end. As a magnetic sample, a 10 mm-diameter and 1 mm-thickness polycrystalline YIG (yttrium iron garnet) disk was used. The probe is set so that the tip is nearly contacted with a sample, and the reflection spectrum (S_{11}) was measured by using a vector network analyzer. Under in-plane static magnetic field of 550 Oe, by scanning the RF probe on the YIG disk, spatially dependent three FMR signals were detected at 2.79, 3.03 and 3.14 GHz. All of them showed strong spatial dependences over the sample, and these detected FMR signals are well explained by the magnetostatic waves, such as magneto static backward volume wave (MSBVW) and magnetostatic surface wave (MSSW). The used RF probe showed an ability of local prober of magnetic resonance signal, and its spatial resolution limit will be discussed.

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