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Scanning magnetic resonance microscopy: Spatially resolved imaging of ferromagnetic resonance on yttrium iron garnet disk. TOSHU AN[1], TOYOAKI EGUCHI, YUKIO HASEGAWA, The Institute for Solid State Physics, The University of Tokyo — We developed a radio frequency (RF) probe which can be implemented into scanning probe microscope aiming for its spatially resolved imaging. The probe is composed of a sharp tip attached at the end of a semi-rigid coaxial cable which transmits RF over 10 GHz. To measure ferromagnetic resonance (FMR) of a sample, the probe is set close to the sample, and the S_{11} parameter was measured by using a network analyzer. As a test magnetic sample, a 10 mm-diameter and 1 mm-thickness polycrystalline YIG (yttrium iron garnet) disk was used. By locating the RF probe at the center of the YIG disk, FMR signal was detected as an absorption dip at 2.8 GHz in the S_{11} measurements under in-plane static magnetic field of 458 Oe. The detected FMR signal has a sharper dip compared with that obtained in the coplanar wave guide method, and by moving the RF probe to the edge of the YIG disk, two different frequencies of FMR signal appears depending on the moving direction parallel or perpendicular to the applied magnetic field. The detected spatially dependent FMR signals are well explained by the magnetostatic waves.

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