

Resonances In Metallic Structures

H. Głowiński,¹ I. Gościańska,¹ and J. Dubowik¹

¹*Institute of Molecular Physics, Poznań, Poland*

The concept of ferromagnetic anti-resonance (FMRA) frequency is simple: it's the frequency where the real part of complex permeability $Re(\mu) = 0$ resulting in a high microwave transmission while for ferromagnetic resonance (FMR) the complex permeability μ shows a pole, which corresponds to the condition of resonantly enhanced FMR absorption. Although the phenomenon of ferromagnetic anti-resonance has been known for a long time, its application to ferromagnetic films/foils is limited to the thickness of several micrometers (of the range of skin depth) using a transmission waveguide equipment. Our aim is to show the usefulness of a vector network analyzer combined with a strip line for analysis both FMR and FMRA for parallel and perpendicular configurations in ferromagnetic ribbons based on ferromagnetic amorphous and nanocrystalline alloys. A problem of FMRA in thin films of several nm in thickness will be also discussed in connection with previous measurements [1].

References:

[1] Y. S. Gui et al. Phys Rev. Lett. 95, 056807 (2005)