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Study of Fe/Cr Magnetic Multilayers and Periodic Arrays of Sub-micron Magnetic Dots by Vector Network Analyzer Technique FARKHAD ALIEV, JUAN FRANCISCO SIERRA, AHMAD AWAD, VLADIMIR PRYADUN, Universidad Autonoma de Madrid, Spain, GLEB KAKAZEI, Institute of Magnetism NASU, Kiev, Ukraine — Vector network analyzer (VNA) technique up to 8.5 GHz was applied to measure in-plane dynamic response in Fe/Cr magnetic multilayers and for the in-plane magnetized periodic arrays of Permalloy circular magnetic dots. In the antiferromagnetically coupled $[\text{Fe/Cr}]_n$ multilayers ($n=10,20,40$) we have investigated field dependence of the acoustic resonance in a wide range of temperatures between 300K down to 2K both for the low magnetic fields and close to the saturation field. FMR studies of the array of FeNi dots with diameter of 1 micron, the aspect ratio $L/R=0.1$ and with centre to centre distance varying between 1.2 to 2.5 micron allowed to resolve multiple FMR resonances as a function of magnetic field. We have found the main FMR linewidth to be dependent on the magnetic history. For the magnetic fields below 300 Oe, where magnetic vortex state forms, we have observed the field dependence of the radial modes ($f_r > 6\text{GHz}$) to show minima close to the zero magnetic field.

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