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The effect of radiofrequency modulation of ^{57}Fe hyperfine interaction by rotating magnetic field

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Abstract

The effect of ^{57}Fe hyperfine interaction radiofrequency (rf) modulation by external rotating magnetic field was studied in thin Permalloy foil by means of Mössbauer spectroscopy. The rf effect was investigated as a function of intensity for several rf field frequencies. The experiments show that the external rotating rf field causes considerable changes in the hyperfine pattern. The obtained spectra are in disagreement with those obtained by Perlow [Phys. Rev. 172 (1968) 319]. They also are inconsistent with magnetostriction hypothesis. Proceeding from the Mössbauer spectrum analysis one may conclude that the magnetization of investigated foil changes its direction in a complex manner. However, the undertaken experiments show that the essential number of Mössbauer nuclei experience the rotating magnetic field influence.
