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Measuring the Magnetostrictive Effect on Ferromagnets Using a Michelson Interferometer

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Abstract

Magnetostriction is the change in size or shape of objects during magnetization. In ferromagnets, magnetostriction reaches large values . In antiferromagnets, paramagnets and diamagnets, this value is very small. In modern theory of magnetism, magnetostriction is considered to be the result of two main types of interactions in ferromagnetic bodies: electrical exchange and magnetic interaction. Accordingly, the magnetostriction in a crystal lattice can be of two types depending on the nature of the deformation [2]. Due to changes in magnetic forces and changes in alternating forces (dipole-dipole, spin-orbital). In this paper, a linear change in the magnetic field of some ferromagnetic substances was measured using a Michelson interferometer. The measurement accuracy of the Michelson interferometer is shown to be 10-7m. A graph of the linear variation of iron and nickel as a function of the magnetic field value is plotted.

Keywords

Linear change, Magnetic field, Ferromagnetic substances

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