Magnetostriction with the Michelson interferometer 4.3.08-00

What you can learn about ...

- ➔ Interference
- ➔ Wavelength
- ➔ Diffraction index
- ➔ Speed of light
- ➔ Phase
- ➔ Virtual light source
- ➔ Ferromagnetic material
- ➔ Weiss molecular magnetic fields
- ➔ Spin-orbit coupling

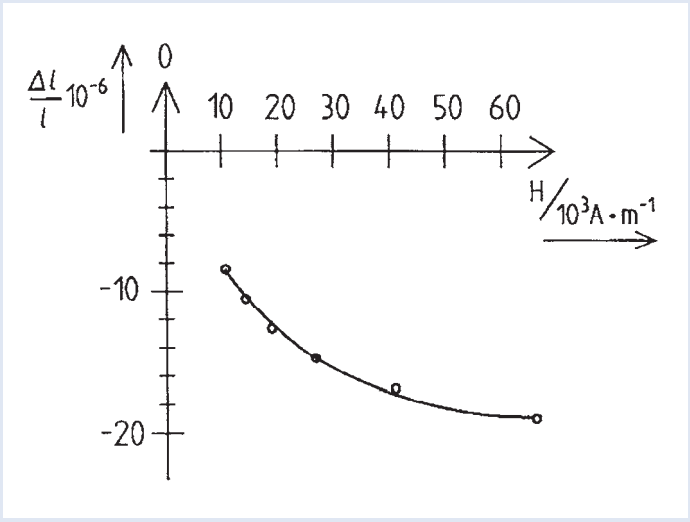
Principle:

With the aid of two mirrors in a Michelson arrangement, light is brought to interference. Due to the magnetostrictive effect, one of the mirrors is shifted by variation in the magnetic field applied to a sample, and the change in the interference pattern is observed.

What you need:

Optical base plate with rubberfeet	08700.00	1
Laser, He-Ne 0.2/1.0 mW, 220 V AC*	08180.93	1
Adjusting support 35 x 35 mm	08711.00	3
Surface mirror 30 x 30 mm	08711.01	4
Magnetic foot for optical base plate	08710.00	7
Holder for diaphragm/ beam plitter	08719.00	1
Beam plitter 1/1, non polarizing	08741.00	1
Lens, mounted, f = +20 mm	08018.01	1
Lens holder for optical base plate	08723.00	1
Screen, white, 150 x 150 mm	09826.00	1
Faraday modulator for optical base plate	08733.00	1
Rods for magnetotriction, set of 3	08733.01	1
Power supply, universal	13500.93	1
Digital multimeter 2010	07128.00	1
Flat cell battery, 9 V	07496.10	1
Connecting cable, 4 mm plug, 32 A, blue, l = 50 cm	07361.04	1
**Alternative:*		
He/Ne Laser, 5mW with holder	08701.00	1
Power supply for laser head 5 mW	08702.93	1

Complete Equipment Set, Manual on CD-ROM included
Magnetostriction with the Michelson interferometer P2430800



Measuring results of the magnetostriction of nickel with the relative change in length $\Delta l/l$ plotted against applied field strength H.

Tasks:

1. Construction of a Michelson interferometer using separate optical components.
2. Testing various ferromagnetic materials (iron and nickel) as well as a non-ferromagnetic material (copper), with regard to their magnetostrictive properties.