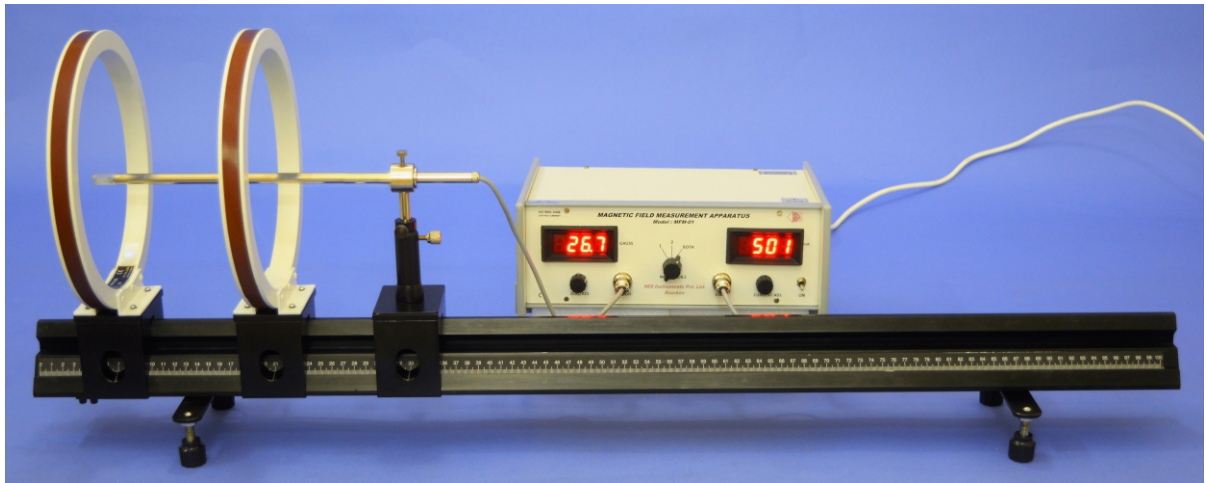


MFM-01

Magnetic Field Measurement Apparatus (Biot Savart's Law Set-up)



Introduction

The experiment consists of two coils, Constant Current Power Supply and Gaussmeter. The Gaussmeter probe is mounted on a rail with a scale. It can move smoothly and precisely for measurement of magnetic field along the centre of the coils.

The following studies Biot Savart's Law can be carried out with the set-up:

1. Study of magnetic field due to one coil and calculation of its diameter.
2. Study of Principal of super-imposition of magnetic field due to 2 coils by keeping the distance between the coils at a , $>a$ and $<a$, where a is the radius of the coil.

Legend

- Line 1 : Magnetic Profile when the distance between the coils is $>a$
- Line 2 : Magnetic Profile when the distance between coils is $=a$
- Line 3 : Magnetic Profile when the distance between coils is $<a$
Superimposition overlaps completely

Apparatus consists of the following

1. Digital Gaussmeter

| | | |
|------------|---|---|
| Range | : | 0-200 |
| Resolution | : | 0.1G |
| Accuracy | : | $\pm 0.5\%$ |
| Display | : | 3½ digit 7 segment LED with autopolarity. |

2. Two Coil

| | | |
|----------------|---|-------|
| Diameter | : | 200mm |
| Number of turn | : | 1000 |

3. Constant Current Power Supply

| | | |
|----------------|---|--------------------------------------|
| Current | : | 0-0.5A Smoothly adjustable |
| Line Regulator | : | $\pm 0.2\%$ for 10% mains variation. |
| Load Regulator | : | $\pm 0.2\%$ for 0 to full load |
| Display | : | 3½ digit 7 Segment LED Display |
| Protection | : | Against overload/ short current. |

The 2 coils are mounted on platform one coil is fixed and other coil move smoothly on a rail along with the axis of the coils.

The experiment is complete in itself.