4.3.05-00 Magnetic field outside a straight conductor

What you can learn about ...

- ➔ Maxwell's equations
- ➔ Magnetic flux
- ➔ Induction
- ➔ Superimposition of magnetic fields

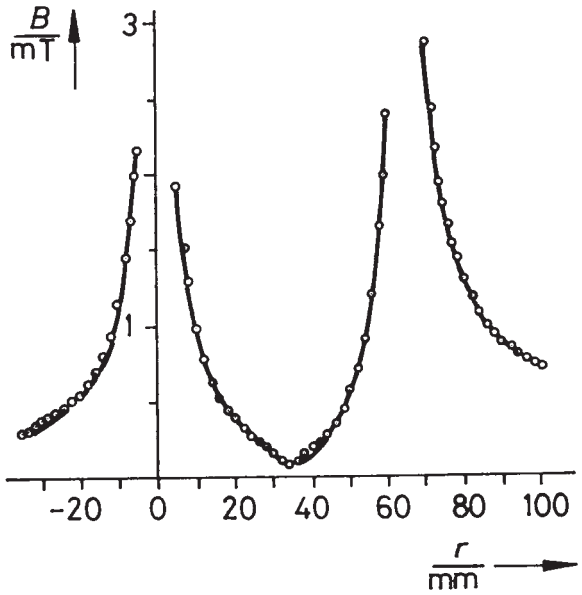
Principle:

A current which flows through one or two neighbouring straight conductors produces a magnetic field around them. The dependences of these magnetic fields on the distance from the conductor and on the current are determined.

What you need:

Electric conductors, set of 4	06400.00	1
Coil, 6 turns	06510.00	1
Coil, 140 turns, 6 tappings	06526.01	1
Clamping device	06506.00	1
Iron core, rod shaped, laminated	06500.00	1
Iron core, U-shaped, laminated	06501.00	1
Variable transformer with rectifier 15 V~/12 V- , 5 A	13530.93	1
Teslameter, digital	13610.93	1
Hall probe, axial	13610.01	1
Current transformer/Clamp Ampermeter adaptor	07091.00	1
Digital multimeter 2010	07128.00	1
Meter Scale, l = 1000 x 27 mm	03001.00	1
Barrel base -PASS-	02006.55	1
Support rod -PASS-, square, l = 400 mm	02026.55	1
Right angle clamp -PASS-	02040.55	1
G-clamp	02014.00	2
Connecting cable, 4 mm plug, 32 A, yellow, l = 50 cm	07361.02	2

Complete Equipment Set, Manual on CD-ROM included
Magnetic field outside a straight conductor P2430500



Magnetic field component B_y of two parallel conductors on the x-axis as a function of the distance from one conductor, if the current in both conductors is in the same direction.

Tasks:

Determination of the magnetic field

1. of a straight conductor as a function of the current,
2. of a straight conductor as a function of the distance from the conductor,
3. of two parallel conductors, in which the current is flowing in the same direction, as a function of the distance from one conductor on the line joining the two conductors,
4. of two parallel conductors, in which the current is flowing in opposite directions, as a function of the distance from one conductor on the line joining the two conductors.