Studiul câmpului magnetic în exteriorul unui conductor liniar foarte lung parcurs de curent electric. Verificarea legii lui Biot-Savart.

Numar alocat: 96
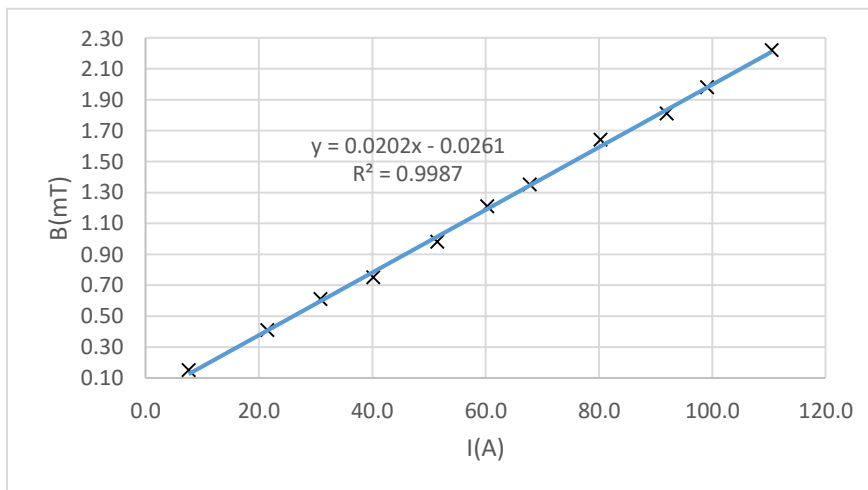
1-2.

Tabel 1

r = 1.0 cm

I (A)	B(mT)
7.6	0.15
21.5	0.41
30.9	0.61
40.2	0.75
51.5	0.98
60.3	1.21
67.8	1.35
80.3	1.64
92.0	1.81
99.1	1.98
110.5	2.22

Tabel 2

I= 46 A

position r (cm)	1/r (cm^-1)	B(mT)
0.5	2.00	1.84
1.0	1.00	0.94
1.5	0.67	0.62
2.0	0.50	0.44
2.5	0.40	0.35
3.0	0.33	0.35
3.5	0.29	0.30
4.0	0.25	0.25
4.5	0.22	0.18
5.0	0.20	0.21

3. Grafic B(I)

$y = 0.0202x - 0.0261$
$R^2 = 0.9987$

Panta experimentală: m = 0.0202 mT/A

Panta teoretică: $\mu_0/(2 \cdot \pi \cdot r_0)$

$m = \mu_0/(2 \cdot \pi \cdot r_0) \Rightarrow \mu_0 = m \cdot 2 \cdot \pi \cdot r_0 \Rightarrow \mu_0 = 0.0202 \cdot 2 \cdot 3.14 \cdot 1.00 = \textbf{0.1268 mT·cm/A} =$

$= 0.1268 \cdot 10^{-3} T \cdot 10^{-2} m /A = 12.68 \cdot 10^{-7} T \cdot m/A = 12.68 \cdot 10^{-7} N \cdot A^{-2} \ (\Leftrightarrow \mu_0 = 12.68 \cdot 10^{-7} H/m)$

Grafic B(r)
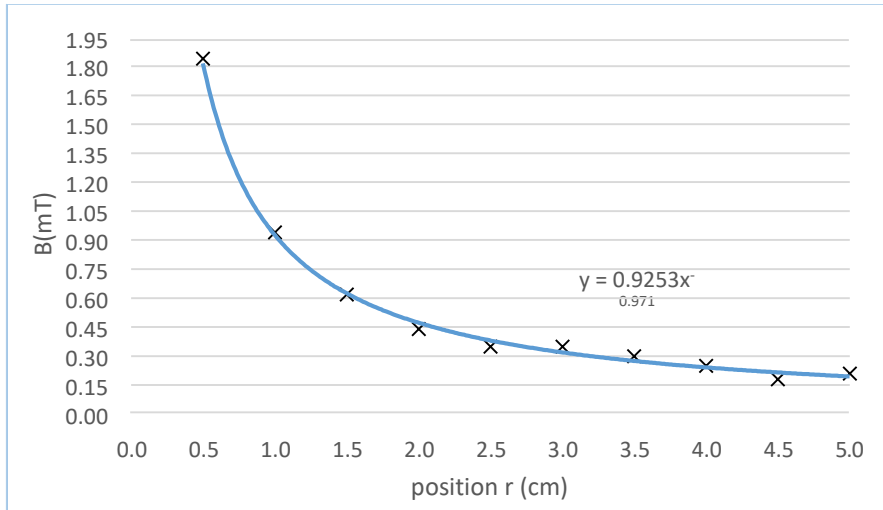
Grafic B(1/r)
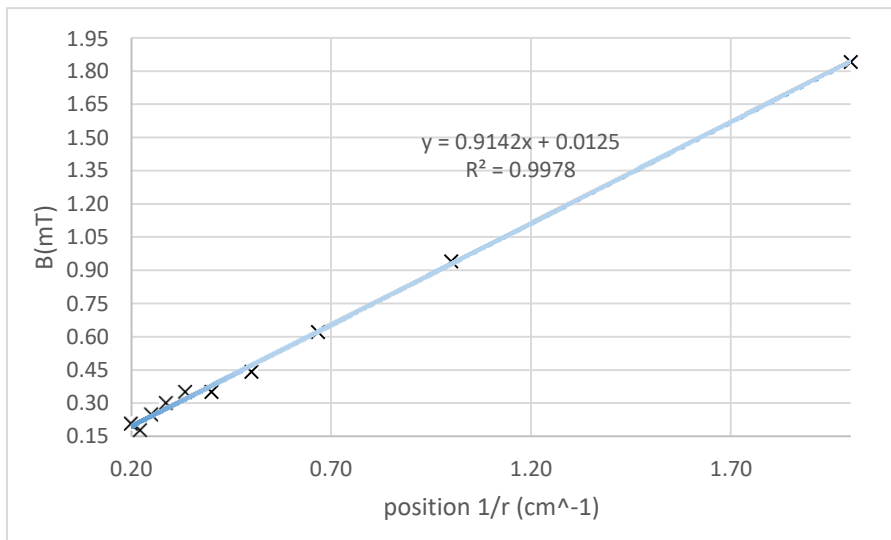
Panta exprimentală: m = 0.9142 mT·cm;   Panta teoretică: $(\mu_0 \cdot I_0)/(2 \cdot \pi)$;

$m = (\mu_0 \cdot I_0)/(2 \cdot \pi) \Rightarrow \mu_0 = m \cdot 2 \cdot \pi / I_0 \Rightarrow \mu_0 = 0.9142 \cdot 2 \cdot 3.14/46 = \textbf{\textit{0.1248 mT·cm/A}} =$

$= 0.1248 \cdot 10^{-3} T \cdot 10^{-2} m /A = 12.48 \cdot 10^{-7} T \cdot m/A = 12.48 \cdot 10^{-7} N/A^2$ aprox. $4 \pi \cdot 10^{-7} N/A^{-2}$.

$(1T = N \cdot A^{-1} \cdot m^{-1})$ $(N/A^{-2} = H/m)$