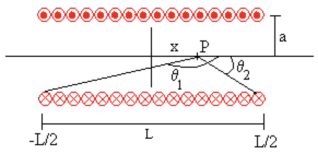
Campo magnético en x (Sin longitud)

$$B_x = \frac{\mu_0 N I a^2}{2(x^2 + a^2)^{3/2}} \quad \text{(sobre el eje de } N \text{ espiras circulares)} \quad (28.16)$$

μ_0	$4\pi \times 10^{-7}$ Wb/A · m
N	número de espiras
I	Corriente en la bobina
a	radio de la bobina

Campo magnético en x con longitud



$$B = \frac{\mu_0 i N}{2L}(\cos\theta_2 - \cos\theta_1)$$

$$\cos\theta_2 = \frac{L/2-x}{\sqrt{(L/2-x)^2+a^2}} \qquad \cos\theta_1 = \frac{-L/2-x}{\sqrt{(-L/2-x)^2+a^2}}$$

$$B = \frac{\mu_0 i N}{2L}\left(\frac{L/2-x}{\sqrt{(L/2-x)^2+a^2}} + \frac{L/2+x}{\sqrt{(L/2+x)^2+a^2}}\right)$$

Proyectil ø 6-10 mm · 2·5 veces ø

Tubo 300 mm

bobina = l proyectil 50 A/mm²

$$H_0 = \frac{N \cdot I \cdot f(a,b)}{2 \cdot \beta \cdot R_l (\alpha - 1)} = \frac{N \cdot I \cdot \frac{L}{2 \cdot R_l} \cdot \left[\operatorname{arcsinh}\left(\frac{\frac{R_0}{R_l}}{\frac{L}{2R_l}}\right) - \operatorname{arcsinh}\left(\frac{1}{\frac{L}{2R_l}}\right)\right]}{2 \cdot \frac{L}{R_l} \cdot R_l \cdot \left(\frac{R_0}{R_l} - 1\right)}$$

$$\frac{N \cdot I \cdot \left[\operatorname{arcsenh}\left(\frac{R_0 \cdot 2R_l}{R_l \cdot L}\right) - \operatorname{arcsenh}\left(\frac{2R_l}{L}\right)\right]}{4 \cdot R_l \cdot \left(\frac{R_0}{R_l} - 1\right)}$$

$$N = \frac{L w}{H \cdot (R_0 + R_l)} = \frac{\frac{4 \cdot F \cdot (R_0^2 - R_l^2) \cdot L}{d^2}}{H \cdot (R_0 + R_l)}$$

$$N = \frac{4 \cdot F \cdot L \cdot (R_0^2 - R_l^2)}{d^2 \cdot H \cdot (R_0 + R_l)}$$

$$I = \frac{V}{R_e + R_c} = \frac{V}{R_e + \frac{4 \cdot P \cdot (R_0^2 - R_l^2) \cdot L}{d^4}}$$

$$\frac{F \cdot L \cdot (R_0^2 - R_l^2) \cdot V \cdot \left[\operatorname{arcsen}\left(\frac{R_0 \cdot 2R_l}{R_l \cdot L}\right) - \operatorname{arcsen}\left(\frac{2R_l}{L}\right)\right]}{R_l \cdot \left(\frac{R_0}{R_l} - 1\right) \cdot d^2 \cdot H \cdot (R_0 + R_l) \cdot \left(R_e + \frac{4 \cdot P \cdot (R_0^2 - R_l^2) \cdot L}{d^4}\right)}$$