

Tokovni elementi:

-tanka žica:  $I\vec{\delta l}$

-gibajoča elektrina:  $\delta Q\vec{v}$

-elektrinski oblak:  $\vec{J}\delta v$

-folija:  $\vec{K}\delta a$ ,  $\vec{K} = \frac{I}{\delta}$

Magnetna sila:

$$\delta\vec{F}_m = \frac{\mu_0}{4\pi R^2} I\vec{\delta l} \times \left( I' \vec{\delta l}' \times \frac{\vec{R}}{R} \right)$$

$$\delta\vec{F}_m = I\vec{\delta l} \times \vec{B}$$

Gostota magnetnega pretoka:

$$\delta\vec{B}(T) = \frac{\mu_0 I' \vec{\delta l}' \times \vec{R}}{4\pi R^3}$$

$$\vec{B}(T) = \frac{\mu_0}{4\pi} \int_{(cel.)} \frac{\vec{J}(T') \times \vec{R}}{R^3} dv'$$

Magnetno polje tokovnega elementa:

$$dB_\varphi(T) = \frac{\mu_0 I' \vec{\delta l}' \sin \varphi}{4\pi r^2}$$

Magnetno polje tokovne daljice:

$$B_\varphi(T) = \frac{\mu_0 I}{4\pi \rho} (\cos \alpha_1 - \cos \alpha_2)$$

Magnetno polje tokone premice:

$$B_\varphi(T) = \frac{\mu_0 I}{2\pi \rho}$$

Magnetno polje dolgega dvovoda:

$$B_x = \frac{\mu_0 I}{2\pi} \left( -\frac{y}{\left(x + \frac{d}{2}\right)^2 + y^2} + \frac{y}{\left(x - \frac{d}{2}\right)^2 + y^2} \right)$$

$$B_y = \frac{\mu_0 I}{2\pi} \left( \frac{x + \frac{d}{2}}{\left(x + \frac{d}{2}\right)^2 + y^2} - \frac{x - \frac{d}{2}}{\left(x - \frac{d}{2}\right)^2 + y^2} \right)$$

Magnetno polje pravokotne tokovne zanke:

$$B_z = \frac{\mu_0 I a^2}{2\pi} \frac{1}{\left(\left(\frac{a}{2}\right)^2 + z^2\right) \sqrt{\frac{a^2}{2} + z^2}}$$

Magnetno polje krožne tokovne zanke:

$$B_z(z) = \frac{\mu_0 I \rho_0^2}{2(\rho_0^2 + z^2)^{\frac{3}{2}}}$$

Magnetni pretok:

$$\phi_{skoziA} = \int_A \vec{B} d\vec{a}$$

Neizvornost magnetnega polja:

$$\oint_A \vec{B} d\vec{a} = 0$$

Vrtinčnost magnetnega polja:

$$\oint_L \vec{B} d\vec{l} = \frac{\mu_0 I}{4\pi} (\Omega_2 - \Omega_1) = \mu_0 \sum_{j=1}^n (\pm) I_j = \mu_0 \int_A \vec{J} d\vec{a}$$

Magnetno polje vodnika nad folijo:

$$B_x = \frac{\mu_0 K_z}{2\pi} (\varphi_1 - \varphi_2)$$

$$B_y = \frac{\mu_0 K_z}{2\pi} \ln \frac{\rho_1}{\rho_2}$$

