Indukcija:

$\vec{B}=\frac{\mu I}{4\Pi r}\int\frac{d\vec{l}\times\vec{R}}{|\vec{R}|}$ $\vec{B}=\bigtriangledown\times\vec{A}\ ;\ \bigtriangledown\times\vec{B}=\mu\vec{J}$ $\vec{B}=\mu\vec{H}\ ;\ \vec{B}=\frac{\mu K}{2}$

Ravni vodič: Kružna petlja:

$\vec{R}=\vec{r}-\vec{r'}$ $\vec{B}=\frac{\mu I}{4\Pi r}\left(\sin\varphi+\sin\psi\right)\vec{a_z}$ $\vec{B_z}=\frac{\mu I}{4\Pi}\frac{r_o^2}{(r_o^2+z^2)^{\frac{3}{2}}}\int_{\alpha_1}^{\alpha_2}\mathrm{d}\alpha$ $\vec{B_r}=\frac{\mu I}{4\Pi}\frac{zr_o}{(r_o^2+z^2)^{\frac{3}{2}}}\int_{\alpha_1}^{\alpha_2}\vec{a_r}\,\mathrm{d}\alpha$

$\vec{r}$ prema točki Beskonačni: $\vec{B}=\frac{\mu I}{2\Pi r}$ U istoj ravnini samo B_z komponenta jer $z=0$

$\vec{r'}$ prema izvoru $\vec{a_r}=\vec{a_x}\cos\alpha+\vec{a_y}\sin\alpha$ - ako α ide od x-osi

Granica:

tan: $\vec{n}\times\left(\vec{H_2}-\vec{H_2}\right)=K_s$ norm: $\vec{n}\cdot\left(\vec{B_2}-\vec{B_2}\right)=0$

Struja, tok i induktiviteti:

$I=\iint_S\vec{J}\cdot\vec{n}\,\mathrm{d}S$ $I=\oint_c\vec{H}\cdot\mathrm{d}\vec{l}=\iint_S\vec{J}\cdot\vec{n}\,\mathrm{d}S$ $\Phi=\iint_S\vec{B}\cdot\vec{n}\,\mathrm{d}S$ $M=\frac{\Phi}{I}$

Sila:

$\vec{F}=I\int\mathrm{d}\vec{l}\times\vec{B}$ $\vec{F}=I'\cdot l\frac{\mu I}{2r\Pi}$

struja $\rightarrow$ prsti sila $\rightarrow$ palac indukcija $\rightarrow$ izlazi iz dlana

Energija:

$W=\frac{1}{2}\iiint_V\vec{B}\cdot\vec{H}\,\mathrm{d}V$ $W=\frac{1}{2\mu}\iiint_V|\vec{B}|^2\,\mathrm{d}V$ $W=\frac{\mu}{2}\iiint_V|\vec{H}|^2\,\mathrm{d}V$ $W=\int_s\mathrm{d}\vec{F}\cdot\mathrm{d}\vec{s}$

Magnetski krugovi:

$\Phi=\iint\vec{B}\vec{n}\,\mathrm{d}S\equiv I$ $\oint_c H\,\mathrm{d}\vec{l}\equiv U$ $R_m=\frac{\theta}{\phi}=\frac{Hl_{sr}}{BS}=\frac{1}{\mu}\frac{l_{sr}}{S}$

Otpori i potencijali:

$R=\frac{U}{I}=\rho\frac{l}{S}$ $\varphi=\frac{Q}{4\Pi\epsilon r}=\frac{2I}{4\Pi\kappa r}-kugla$ $\kappa=\frac{1}{\rho}$