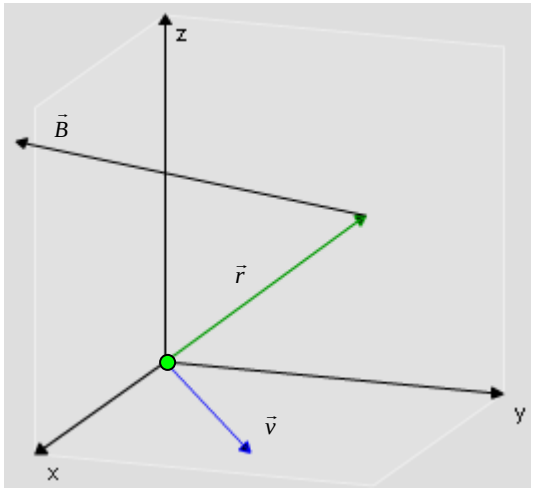
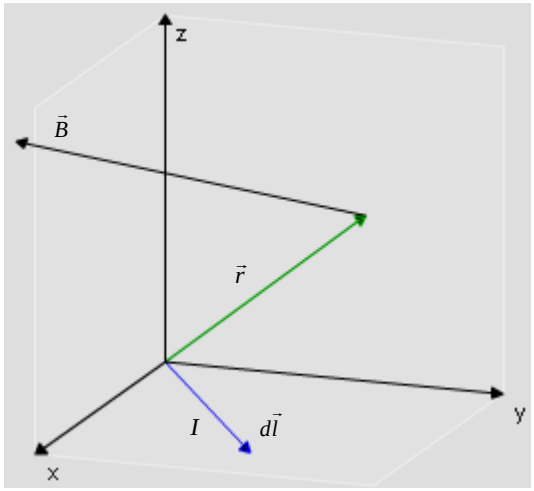
Kap 28 Magnetisk feltkilde

Magnetfelt generert av ladning $\vec{B} = \frac{\mu_0}{4\pi}\frac{q\vec{v}\times\hat{\vec{r}}}{r^2}$



Magnetfelt generert av strømelemen nt (Biot Savarts lov) $d\vec{B} = \frac{\mu_0}{4\pi}\frac{Id\vec{l}\times\hat{\vec{r}}}{r^2}$ $\vec{B} = \frac{\mu_0}{4\pi}\int\frac{Id\vec{l}\times\hat{\vec{r}}}{r^2}$

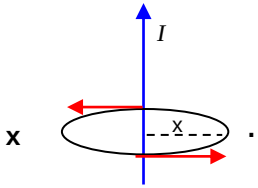


Permeabili tet for vakum $\mu_0 = 4\pi\cdot10^{-7}\frac{Wb}{A\cdot m} = 4\pi\cdot10^{-7}\frac{T\cdot m}{A}$

Kap 28 Magnetisk feltkilde (forts.)

Magnetfelt generert av rett strømførende ledning

$$\vec{B} = \frac{\mu_0 I}{4\pi} \frac{2a}{x\sqrt{x^2 + y^2}} \underset{a \to \infty}{\rightarrow} \frac{\mu_0 I}{2\pi x}$$

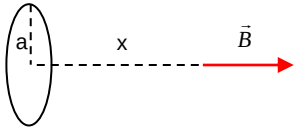


Permeabiliteten for et ferromagnetisk materiale

$$\mu = K_m \mu_0$$

Magnetfelt generert av N loops

$$B_x = \frac{\mu_0 N I a^2}{2(x^2 + a^2)^{3/2}} \underset{x=0}{=} \frac{\mu_0 N I}{2a}$$

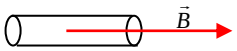


Amperes lov

$$\oint \vec{B} \cdot d\vec{l} = \mu_0 I_{encl}$$

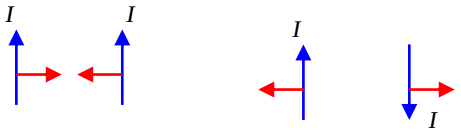
Solenoide

$$B = \mu_0 n I$$



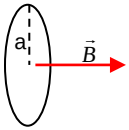
Kraft mellom parallelle strømførende ledere

$$F = \frac{\mu_0 I_1 I_2}{2\pi r}$$



Magnetfelt på x-aksen for en sløyfe som fører strøm

$$B_x = \frac{\mu_0 N I}{2a}$$

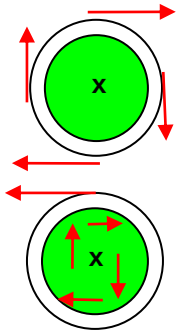


Magnetfelt på utsiden av en lang, rett sylindrisk leder (r > R)

$$B = \frac{\mu_0 I}{2\pi r}$$

Magnetfelt på innsiden av en lang, rett sylindrisk leder (r < R)

$$B = \frac{\mu_0 I r}{2\pi R^2}$$



$$\oint \vec{B} \cdot d\vec{l} = \mu_0 I_{encl}$$

$$\oint B \cdot dl = \mu_0 I_{encl}$$

$$B \oint dl = \mu_0 I_{encl}$$

$$B \cdot 2\pi r = \mu_0 I_{encl}$$

$$B = \frac{\mu_0 I_{encl}}{2\pi r}$$