Magnétostatique

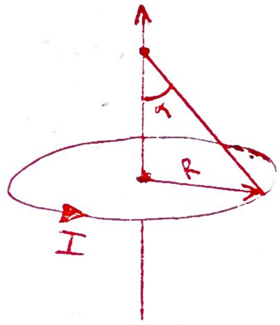
Loi de Biot et Savard :

$$\vec{B}(M) = \oint \mu_0 \frac{I\, \vec{dl}(P) \wedge \vec{PM}}{4\pi\, PM^3}$$

Champ magnétique d'une spire en un pt de son axe

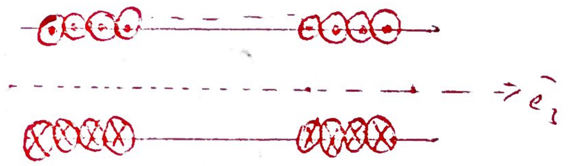
$$\vec{B}(M) = \frac{\mu_0 I}{2} \frac{R^2}{(R^2+z^2)^{\frac{3}{2}}}$$

$$\vec{B}(M) = \frac{\mu_0 I}{2R} \sin^3\alpha$$



Solénoïde infini :

$$\vec{B} = \begin{cases} \mu_0 n I \vec{e_z} & \text{à l'int} \\ \vec{0} & \text{à l'ext} \end{cases}$$

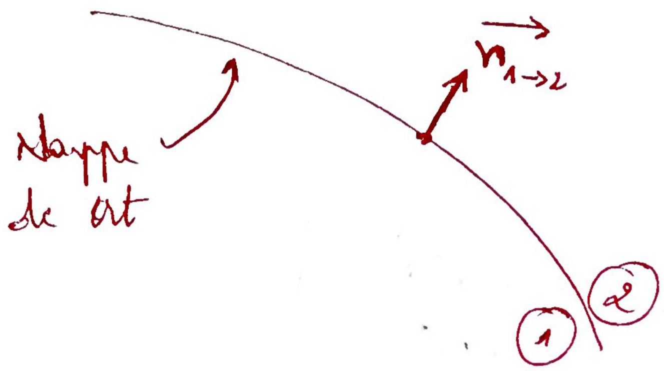


Théorème d'Ampère :

$$\oint \vec{B}(M)\, \vec{dl} = \mu_0 I_{enlacé}$$

$$\vec{rot}\, \vec{B}(M) = \mu_0 \vec{j}(M)$$

Loi de passage pour un courant surfacique



$$\boxed{\vec{B}_2 - \vec{B}_1 = \mu_0 \vec{j}_s \wedge \vec{n}_{1\to2}}$$

Relations intrinsèque de $\vec{B}$:

$$\boxed{\begin{array}{c} \operatorname{div} \vec{B} = 0 \\ \oiint \vec{B}\, d\vec{S} = 0 \end{array}}$$

Potentiel vecteur :

$$\boxed{\vec{B}(M) = \vec{\operatorname{rot}}\,(\vec{A}(M))}$$

$$\boxed{\iint_{(S)} \vec{B}\, d\vec{S} = \oint_{(\mathcal{C})} \vec{A}\, d\vec{\ell}}$$

$$\boxed{\vec{\Delta} \vec{A} = -\mu_0 \vec{j}}$$ Poisson

$$\boxed{\vec{A}(M) = \int \mu_0 \frac{d\vec{C}(P)}{4\pi\, PM}}$$

$d\vec{C} =$
- $I\, d\vec{\ell}(P)$
- $\vec{j}_s\, dS$
- $\vec{j}\, d\tau$

pôle magnétostatique :

$$\boxed{\vec{m} = \frac{1}{2}\int \vec{OP} \wedge d\vec{l}(P)}$$

$$\boxed{\vec{m} = I\vec{S}}$$

$$\boxed{\vec{B}(M) = \mu_0 \frac{2m\cos\theta}{4\pi r^3}\vec{e_r} + \mu_0 \frac{m\sin\theta}{4\pi r^3}\vec{e_\theta} .}$$

$$\boxed{\vec{B}(M) = \frac{\mu_0}{4\pi r^3}\left(3(\vec{m}\cdot\vec{r})\vec{r} - r^2\vec{m}\right)}$$

$$\boxed{\vec{A}(M) = \mu_0 \frac{\vec{m}\wedge\vec{r}}{4\pi r^3}}$$