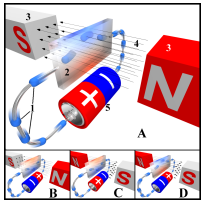


$$F_M = evB$$

Rechte-Hand-Regel



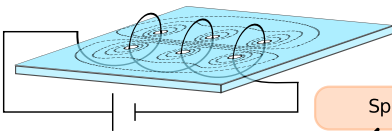
B-Feld

Hallsonde

Kräfteansatz

$$F_M = F_E$$

$$U_H = bv_D B$$

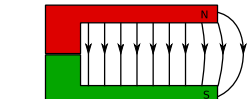


Spulen

Messungen

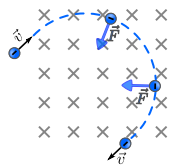
$$B = \mu_0 I \frac{N}{l}$$

Helmholtzspulenpaar



Hufeisenmagnet

$$B = \frac{F}{Il}$$



$$F_Z = F_B$$

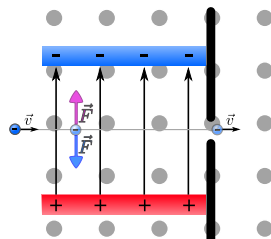
$$v = \frac{e}{m} Br$$

$$\frac{e}{m} = \frac{2U}{B^2 r^2}$$

$$T = \frac{2\pi}{\omega} = \frac{2\pi}{\frac{e}{m} B}$$

Statische Felder

Geschwindigkeitsfilter



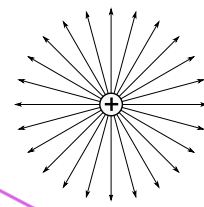
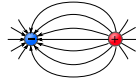
$$F_M = F_E$$

$$v = \frac{E}{B}$$

Kräfteansatz

Feldlinien

- schneiden sich nicht
- verzweigen nicht
- Maß für die Feldstärke
- homogenes Feld äquidistant & parallel



senkrecht auf Leiteroberflächen

geschlossene Feldlinien

E-Feld

$$F_C = \frac{1}{4\pi\epsilon_0} \frac{Q_1 Q_2}{r^2}$$

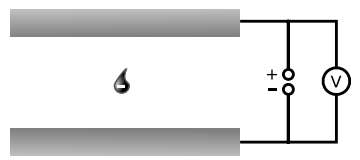
Coloumb Kraft

$$F_E = F_g$$

$$m = \rho V = \rho \frac{4}{3} \pi r^3$$

Millikan-Versuch

Erhaltungsgröße



radiales Feld

Elementarladung

homogenes Feld

Plattenkondensator

$$C = \frac{Q}{U}$$

$$C = \epsilon_0 \frac{A}{d}$$

$$C_g = C_1 + C_2 + \dots$$

$$\frac{1}{C_g} = \frac{1}{C_1} + \frac{1}{C_2} + \dots$$

$$E_p = QEs$$

$$E = \frac{U}{d}$$

Kinematik von Ladungen Q

Querfeld

$$F_E = F = ma$$

$$a = \frac{eU}{m d}$$

$$v_x = v_0 \Rightarrow x = v_0 t$$

$$v_y = at \Rightarrow y = \frac{1}{2} at^2$$

$$y = \frac{ax^2}{2v_0^2}$$

Parabelbahn



Längsfeld

$$E_{kin} = E_E$$

$$v = \sqrt{\frac{2eU}{m}}$$

Energieansatz

