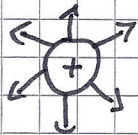


1) Feld einer Punktladung:

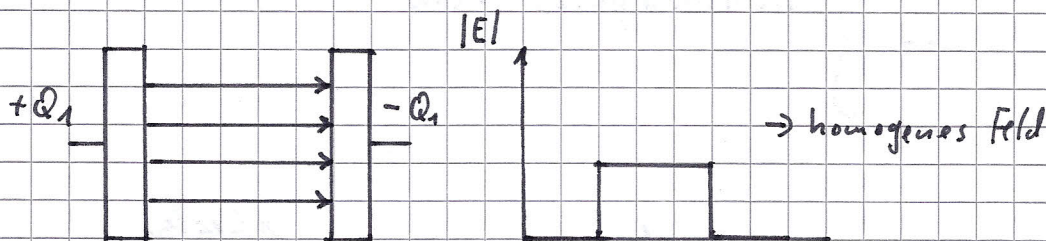
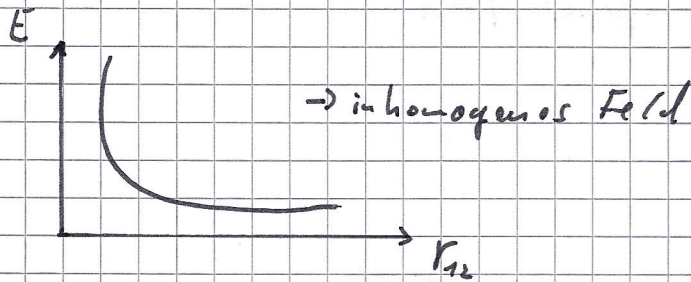
$$Q = Q_1$$

Probeladung  $Q_2$  im Abstand  $r_{12}$



$Q_2$

$$\vec{E} = \frac{\vec{F}_{12}}{Q_2} = \frac{Q}{4\pi\epsilon_0 r_{12}^2} \begin{pmatrix} \vec{r}_{12} \\ r_{12} \end{pmatrix}$$

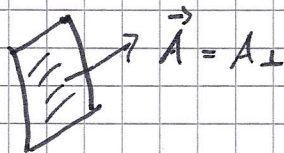


elektrischer Fluß  $\Psi$  und elektrische Flußdichte  $\vec{D}$

$$\Psi = Q$$

$$[\Psi] = As$$

elektrische Verschiebung oder elektrischer Verschiebungsfluß



Flußdichte  $|\vec{D}| = \lim_{\Delta A_{\perp} \rightarrow 0} \frac{\Delta \Psi}{\Delta A_{\perp}}$

$$[\vec{D}] = \frac{As}{m^2} = \frac{C}{m^2}$$

homogenes Feld  $\rightarrow D = \frac{\Psi}{A} = \frac{Q}{A}$

$$\frac{d\Psi}{dA} \rightarrow d\Psi = \vec{D} \cdot d\vec{A} = |\vec{D}| \cdot |d\vec{A}| \cdot \cos \varphi (\vec{D}, d\vec{A})$$