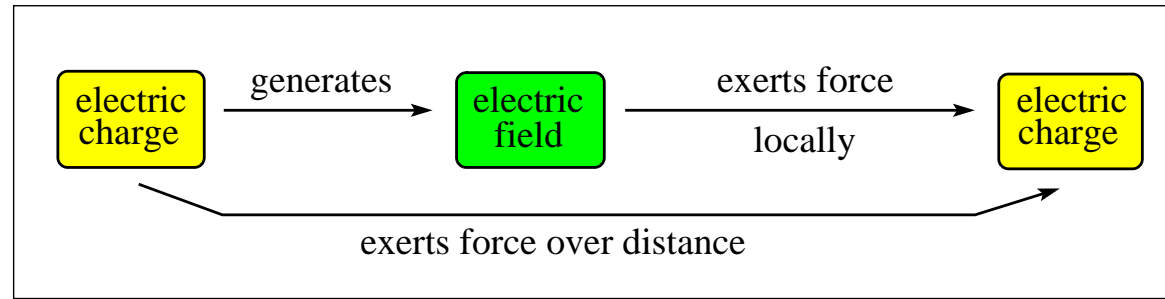


# Electric Field of a Point Charge



(1) Electric field  $\vec{E}$  generated by point charge  $q$ :  $\vec{E} = k \frac{q}{r^2} \hat{r}$

(2) Force  $\vec{F}_1$  exerted by field  $\vec{E}$  on point charge  $q_1$ :  $\vec{F}_1 = q_1 \vec{E}$

(1+2) Force  $\vec{F}_1$  exerted by charge  $q$  on charge  $q_1$ :  $\vec{F}_1 = k \frac{qq_1}{r^2} \hat{r}$  (static conditions)

- Permittivity constant:

$$\epsilon_0 = 8.854 \times 10^{-12} \text{C}^2 \text{N}^{-1} \text{m}^{-2}$$

- $k = \frac{1}{4\pi\epsilon_0} = 8.99 \times 10^9 \text{Nm}^2 \text{C}^{-2}$

