



The Electric Field

W1 D3

More on Chapter 14

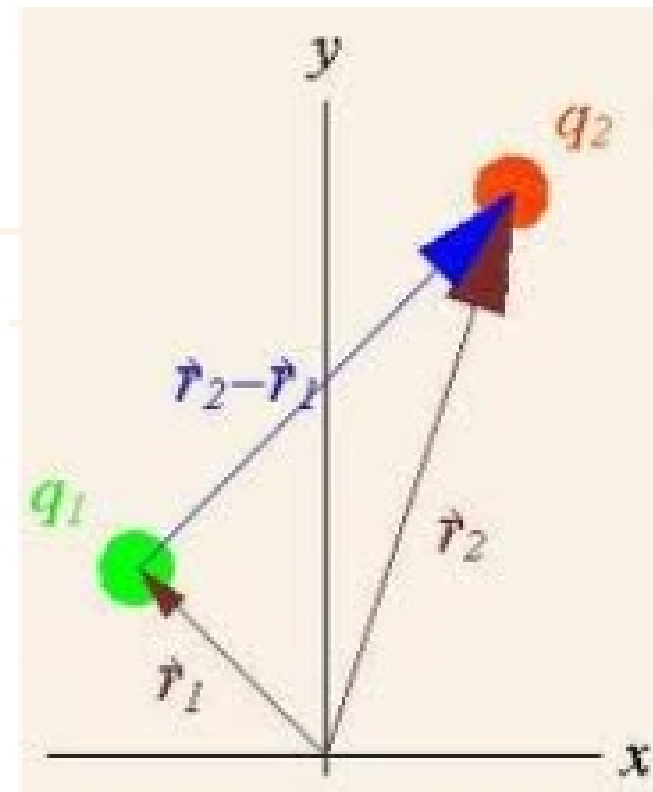
New Groups are posted on our website.

The Electric Field – W1D3



- No QUIZ today. First quiz next Friday
- CLICKERS: MONDAY START
- Last Time
 - Coulombs' Law
 - Vector Notation: $\langle a, b, c \rangle$
 - Superposition
 - Symmetry
- Today – The concept of the Electric Field
- Possibly some discussion about the electric dipole
- Next Major Topic: Charge and Matter
- Note: There is a **NEW WebAssign** that will appear sometime today. Topic: E-Field

COULOMB & VECTOR



$$\mathbf{F} = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_2}{|\mathbf{r}_2 - \mathbf{r}_1|^2} \hat{\mathbf{r}}_{2-1} \quad (\text{Unit Vector in the } (\mathbf{r}_2 - \mathbf{r}_1) \text{ direction})$$

$$\mathbf{r}_{unit} = \frac{\mathbf{r}}{|\mathbf{r}|} \quad (\mathbf{r}_2 - \mathbf{r}_1)_{unit} = \frac{\mathbf{r}_2 - \mathbf{r}_1}{|\mathbf{r}_2 - \mathbf{r}_1|}$$

$$\mathbf{F}(\mathbf{r}) = \frac{q}{4\pi\epsilon_0} \sum_{i=1}^N \frac{q_i (\mathbf{r} - \mathbf{r}_i)}{|\mathbf{r} - \mathbf{r}_i|^3} = \frac{q}{4\pi\epsilon_0} \sum_{i=1}^N \frac{q_i}{R_i^2} \hat{\mathbf{R}}_i,$$