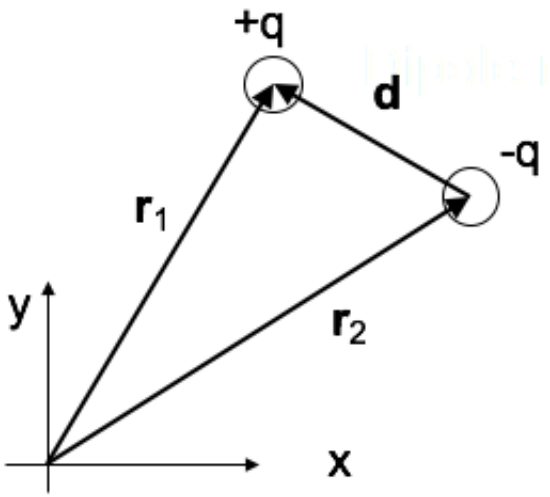


Two charges are positioned as shown to the left. The relative position vector between them is $\mathbf{d}$. What is the dipole moment of this configuration?

$$\sum_i q_i \mathbf{r}_i$$

A. $+q\mathbf{d}$

B. $-q\mathbf{d}$

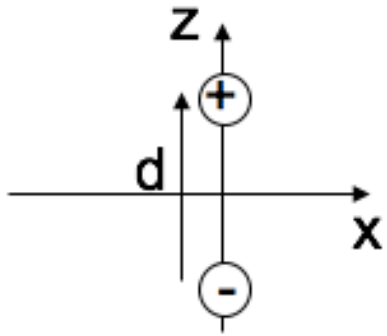
C. Zero

D. None of these; it's more complicated than before!

For a dipole at the origin pointing in the z-direction, we have derived:

$$\mathbf{E}_{dip}(\mathbf{r}) = \frac{p}{4\pi\varepsilon_0 r^3}\left(2\cos\theta\ \hat{\mathbf{r}} + \sin\theta\ \hat{\theta}\right)$$

For the dipole $\mathbf{p} = q\mathbf{d}$ shown, what does the formula predict for the direction of $\mathbf{E}(\mathbf{r} = 0)$?



A. Down
B. Up
C. Some other direction
D. The formula doesn't apply

IDEAL VS. REAL DIPOLE