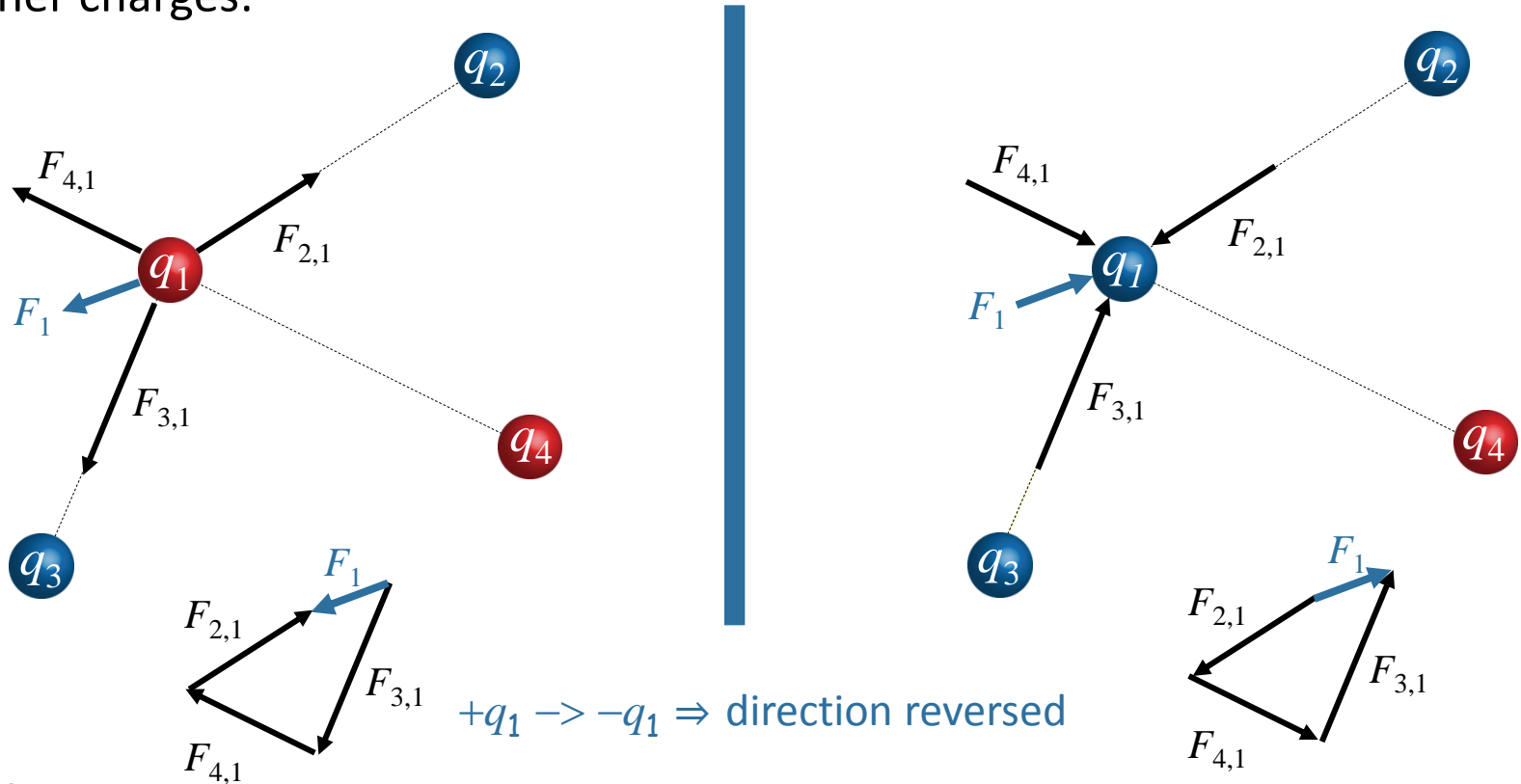


# Coulomb's Law (from last time)

If there are more than two charges present, the total force on any given charge is just the **vector sum** of the forces due to each of the other charges:



MATH:

$$\vec{F}_1 = \frac{kq_1q_2}{r_{12}^2} \hat{r}_{12} + \frac{kq_1q_3}{r_{13}^2} \hat{r}_{13} + \frac{kq_1q_4}{r_{14}^2} \hat{r}_{14} \quad \longrightarrow \quad \vec{E} = \frac{\vec{F}_1}{q_1} = \frac{kq_2}{r_{12}^2} \hat{r}_{12} + \frac{kq_3}{r_{13}^2} \hat{r}_{13} + \frac{kq_4}{r_{14}^2} \hat{r}_{14}$$