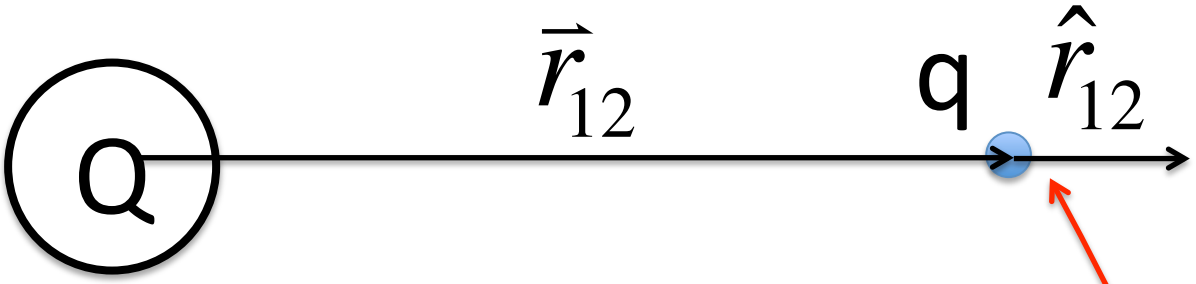
Electric Field

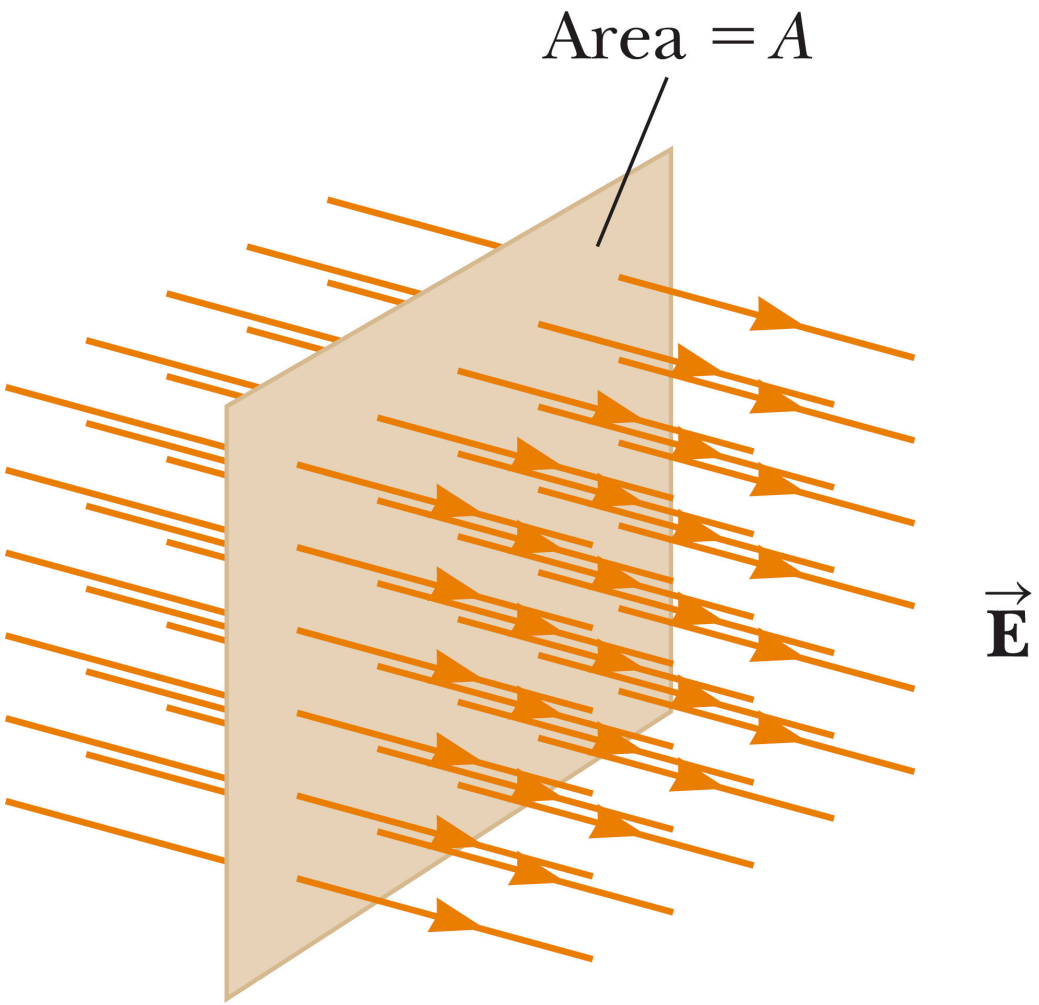


Force on q by Q $$\vec{F}_{Qq} = \frac{1}{4\pi\varepsilon_0}\frac{Qq}{\left|\vec{r}_{12}\right|^2}\hat{r}_{12}$$

Definition of Electric field: at this point is

$$\vec{E} = \frac{\vec{F}_{Qq}}{q} = \frac{1}{4\pi\varepsilon_0}\frac{Q}{\left|\vec{r}_{12}\right|^2}\hat{r}_{12}$$

Electric Flux



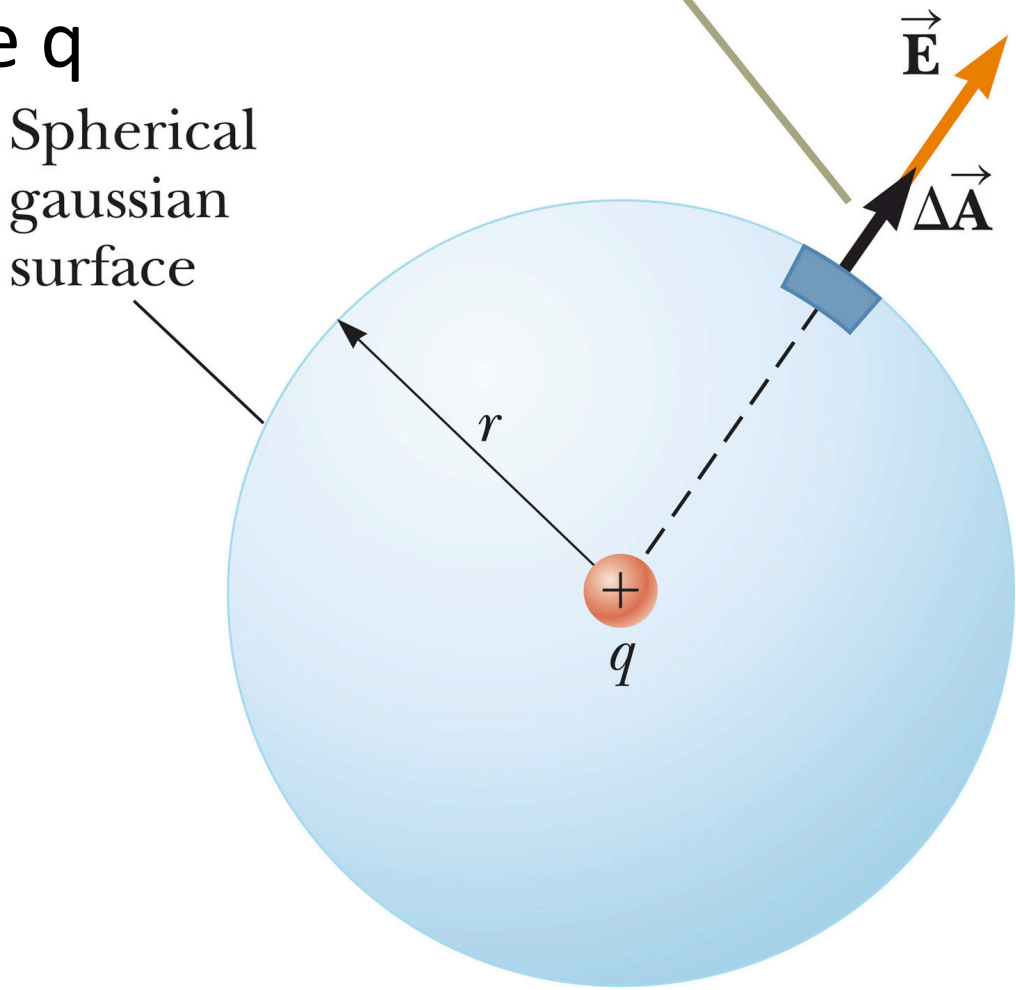
$$\Phi = EA$$

Flux: N m^2/C

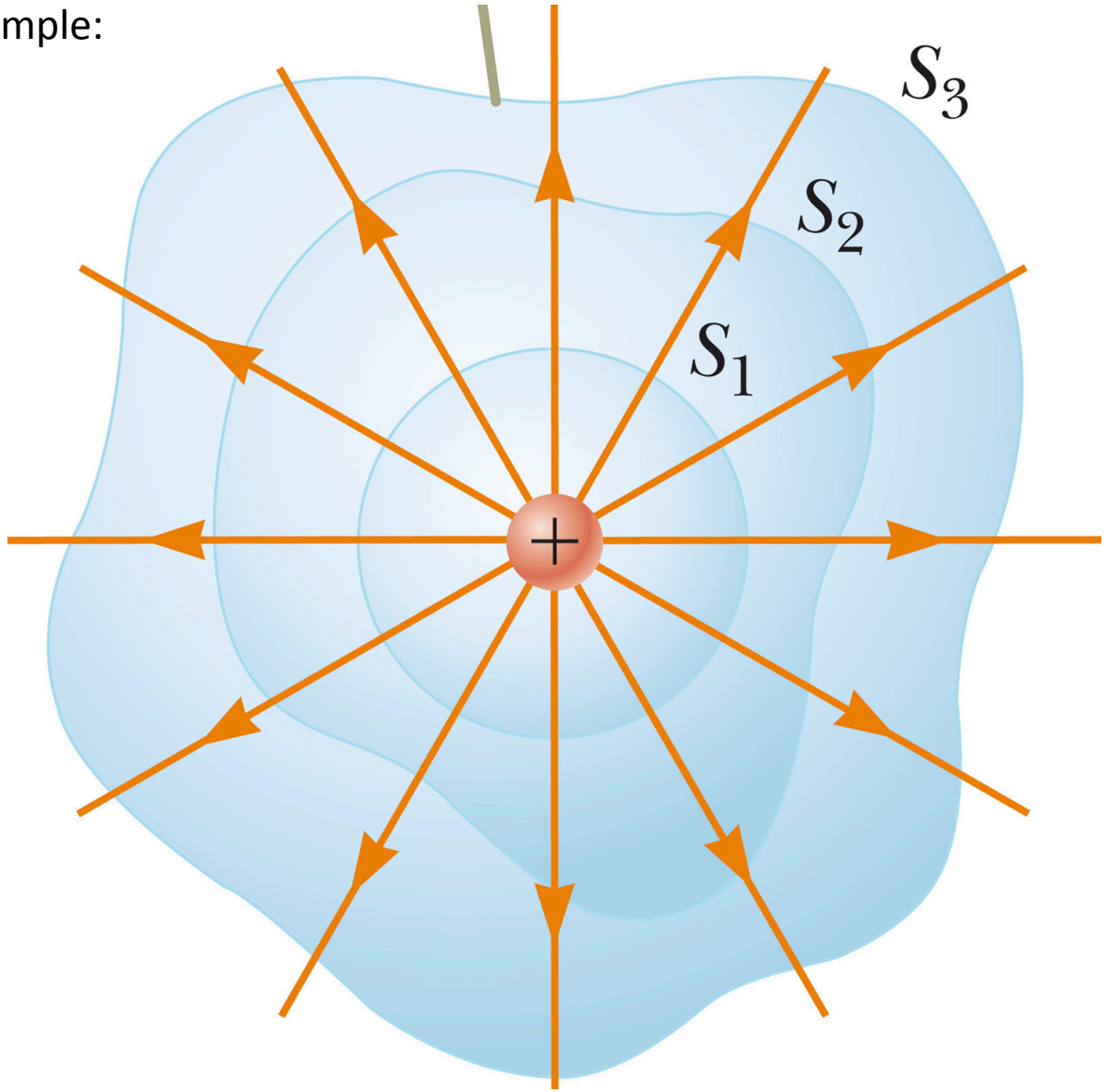
Gauss’s Law [doc cam]

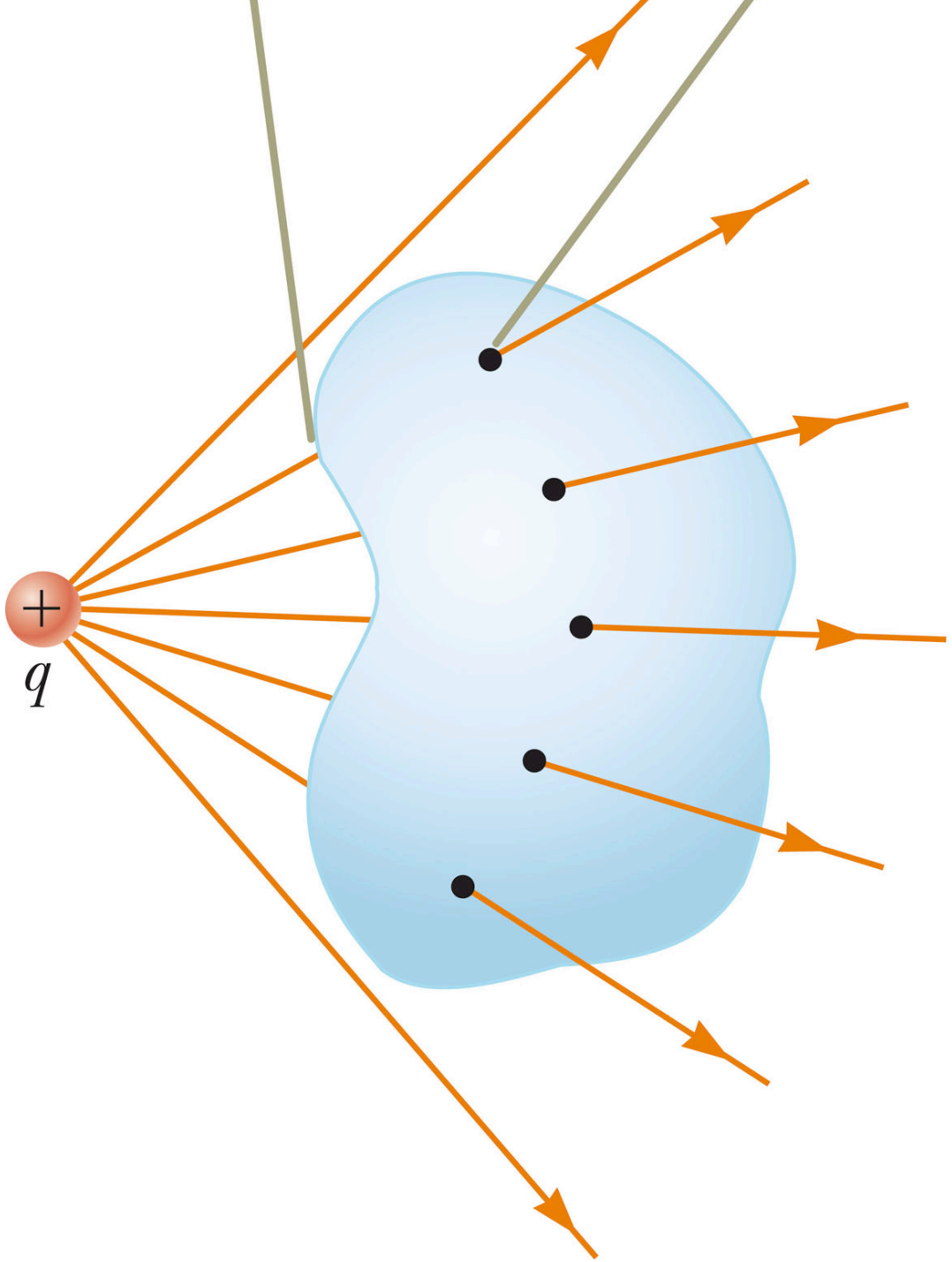
Example: Point charge q

When the charge is at the center of the sphere, the electric field is everywhere normal to the surface and constant in magnitude.



Another Example:




+
q

More Drawing example