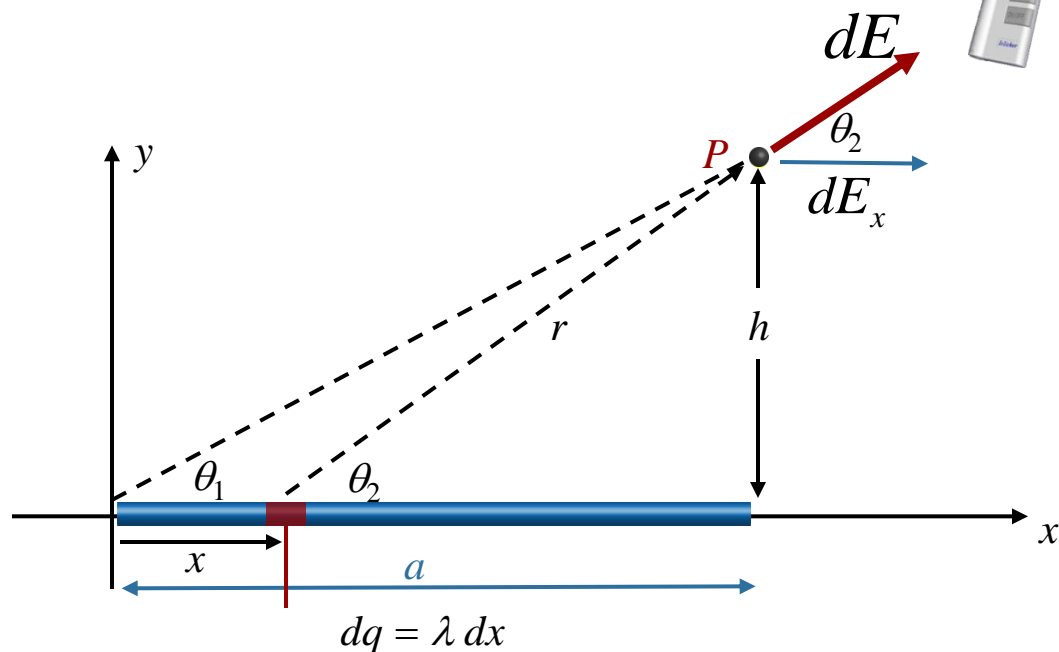


Calculation

Charge is uniformly distributed along the x -axis from the origin to $x = a$.

The charge density is λ C/m. What is the x -component of the electric field at point P : $(x,y) = (a,h)$?



$$\vec{E} = \int k \frac{dq}{r^2} \hat{r}$$

We know:

$$\frac{dq}{r^2} = \frac{\lambda dx}{(a-x)^2 + h^2}$$

$$E_x = \int dE \cos \theta_2$$

What is $\cos \theta_2$?

A) $\frac{x}{\sqrt{a^2 + h^2}}$

B) $\frac{a-x}{\sqrt{(a-x)^2 + h^2}}$

C) $\frac{a}{\sqrt{a^2 + h^2}}$

D) $\frac{a}{\sqrt{(a-x)^2 + h^2}}$