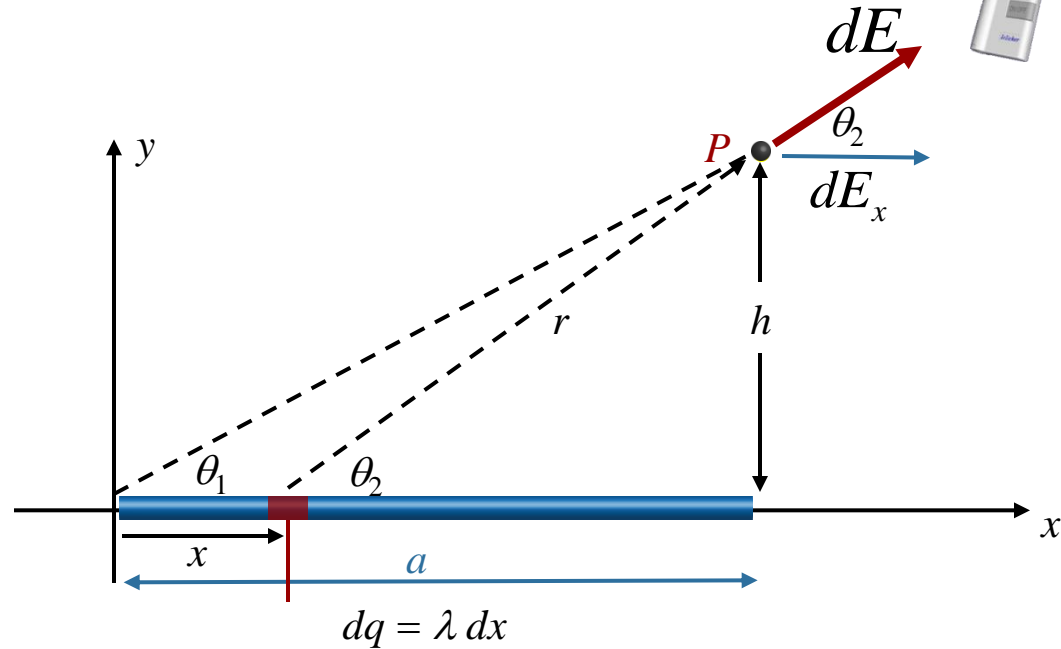


Calculation

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 : $(x,y) = (a,h)$?



We know:

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

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

We want:

$$E_x = \int dE_x$$

What is dE_x ?

A) $dE \cos \theta_1$

B) $dE \cos \theta_2$

C) $dE \sin \theta_1$

D) $dE \sin \theta_2$