



At each step :

$$\vec{E}_i(\vec{r}) = k \frac{\rho(\vec{r}'_i) dV_i}{\|\vec{r}_i\|^2} \hat{r}_i$$

$$\vec{r}_i = \vec{r} - \vec{r}'_i$$

\vec{r}

Overall operation :

$$\vec{E}(\vec{r}) = \int_{z'_i=-R}^R \int_{\varrho'_i=0}^{\sqrt{R^2-z'^2_i}} \int_{\theta'_i=0}^{2\pi} \left(k \frac{\rho(\vec{r}'_i) (\varrho'_i d\theta'_i d\varrho'_i dz'_i)}{\|\vec{r}_i\|^2} \hat{r}_i \right)$$