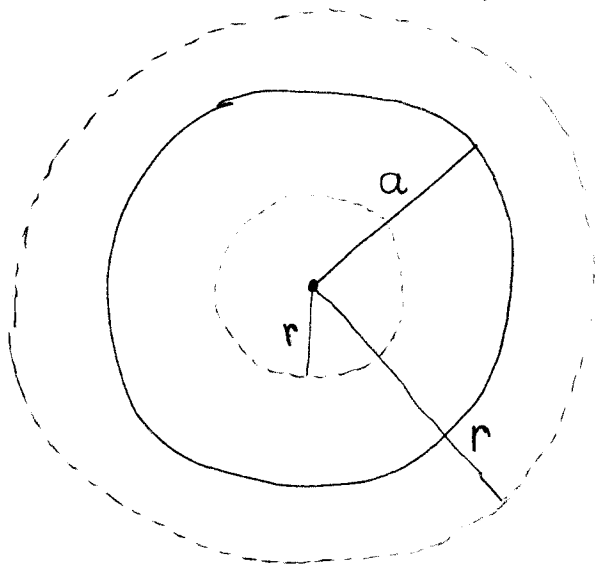


15.) sugár: a ϵ' : relatív permittivitás ρ

$\vec{E}(\vec{r})$, $U(\vec{r}) = ?$



Gauss törvény: $\oint \vec{D} \cdot d\vec{A} = \int \rho dV$

Potencial: $U(\vec{r}) = \int_{\vec{r}}^{P_0} \vec{E} \cdot d\vec{r} \quad U(P_0) = 0$

Gömbszimmetria: \vec{E} sugárirányú
csak r -től függ.
 $E(r)$ és $U(r)$

$r < a$

$$\oint \vec{D} \cdot d\vec{A} = \int \rho dV$$

$$\epsilon_0 \epsilon' E 4r^2 \pi = \frac{4}{3} r^3 \pi \rho$$

$$\Downarrow$$

$$\underline{\underline{E(r)}}$$

$r \geq a$

$$\epsilon_0 E 4r^2 \pi = \frac{4}{3} a^3 \pi \rho$$

$$\Downarrow$$

$$\underline{\underline{E(r)}}$$

$U(r) = 0$ ha $r \rightarrow \infty$

$$U(r) = \int_{\vec{r}}^{\infty} \vec{E} \cdot d\vec{r} = \int_r^{\infty} E dr \quad (\vec{E} \parallel d\vec{r})$$

$r \geq a$

$$U(r) = \int_r^{\infty} E dr = \dots$$

$r < a$

$$U(r) = \int_r^a E dr + U(a) = \dots$$