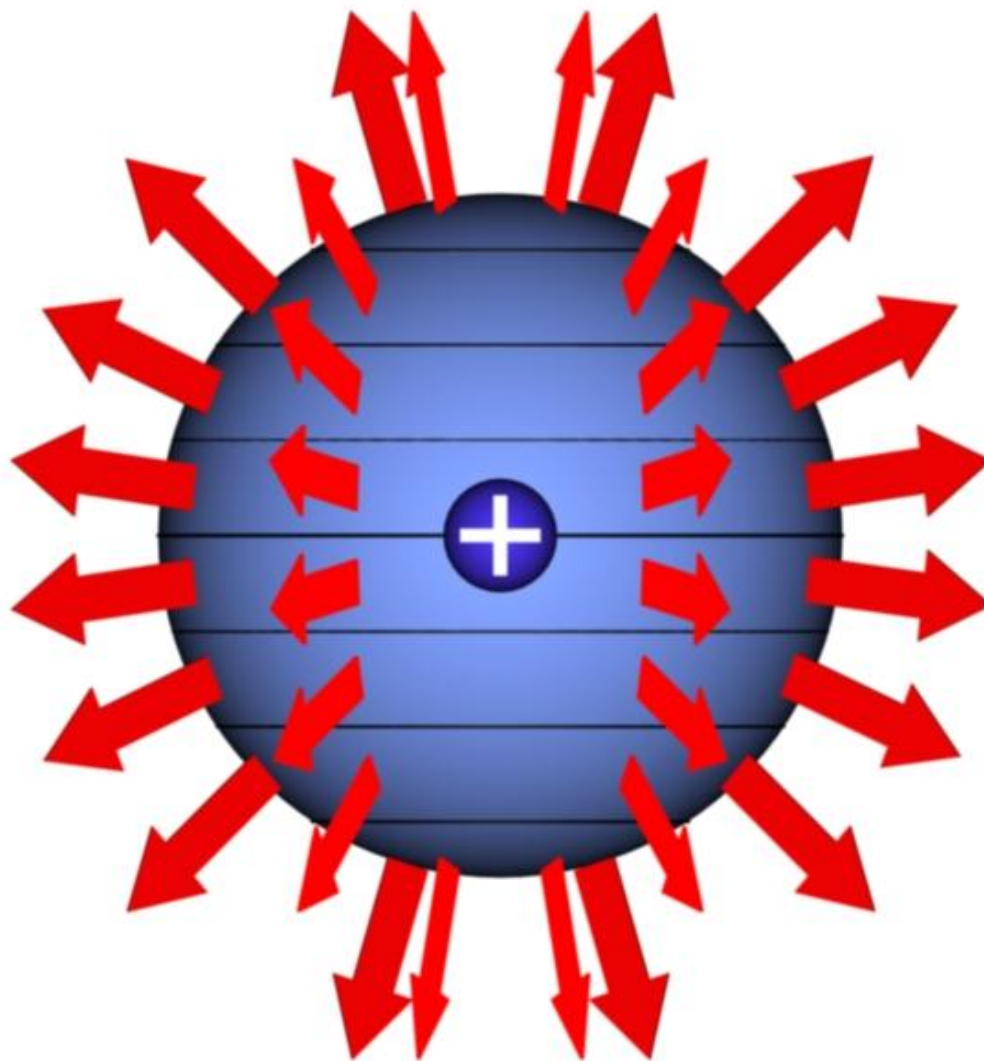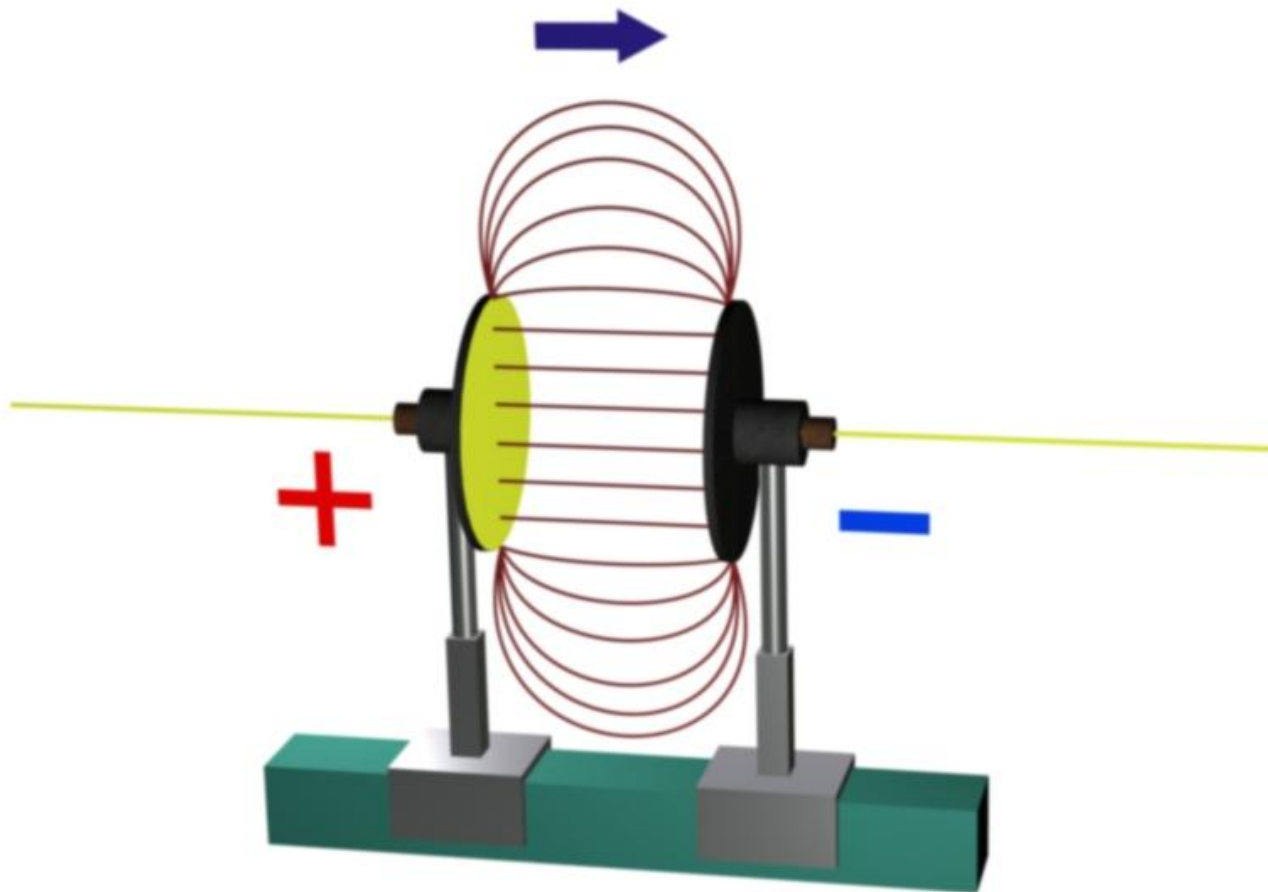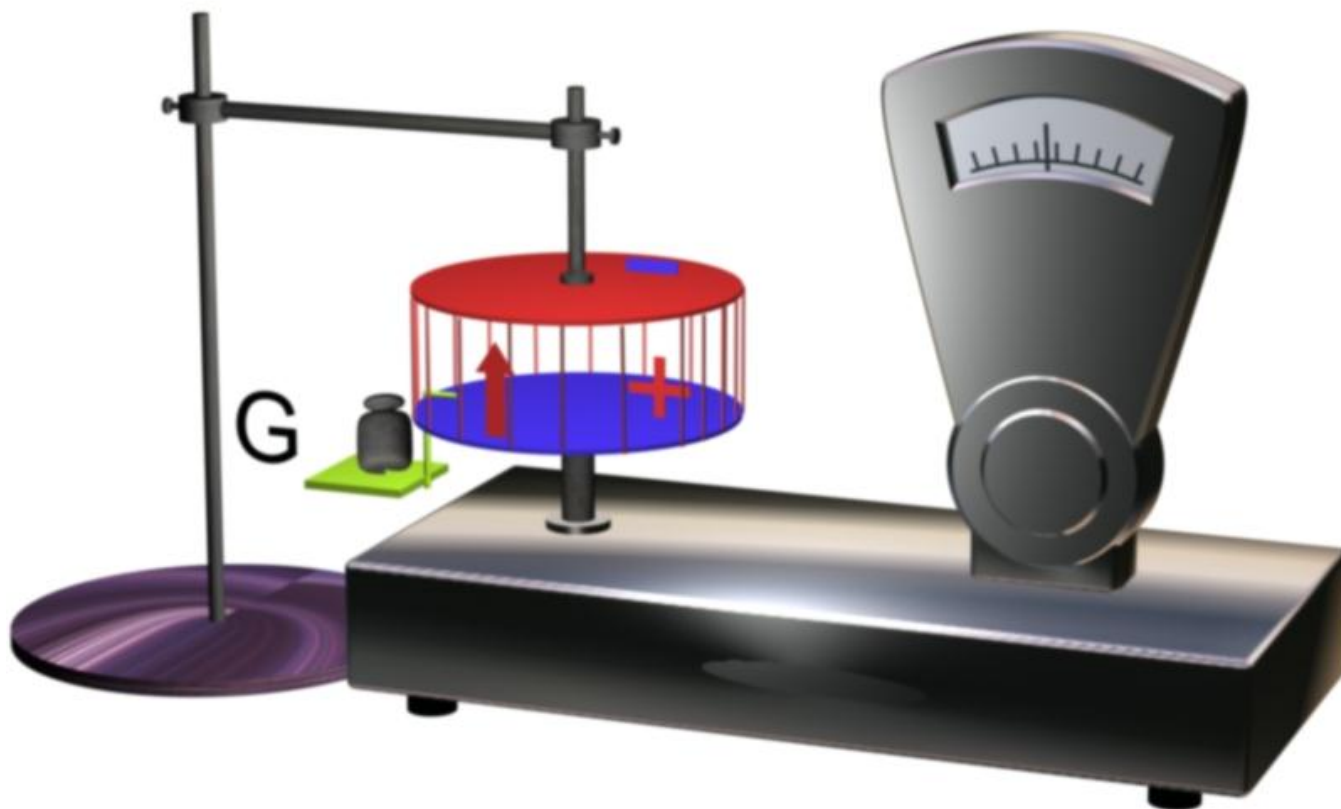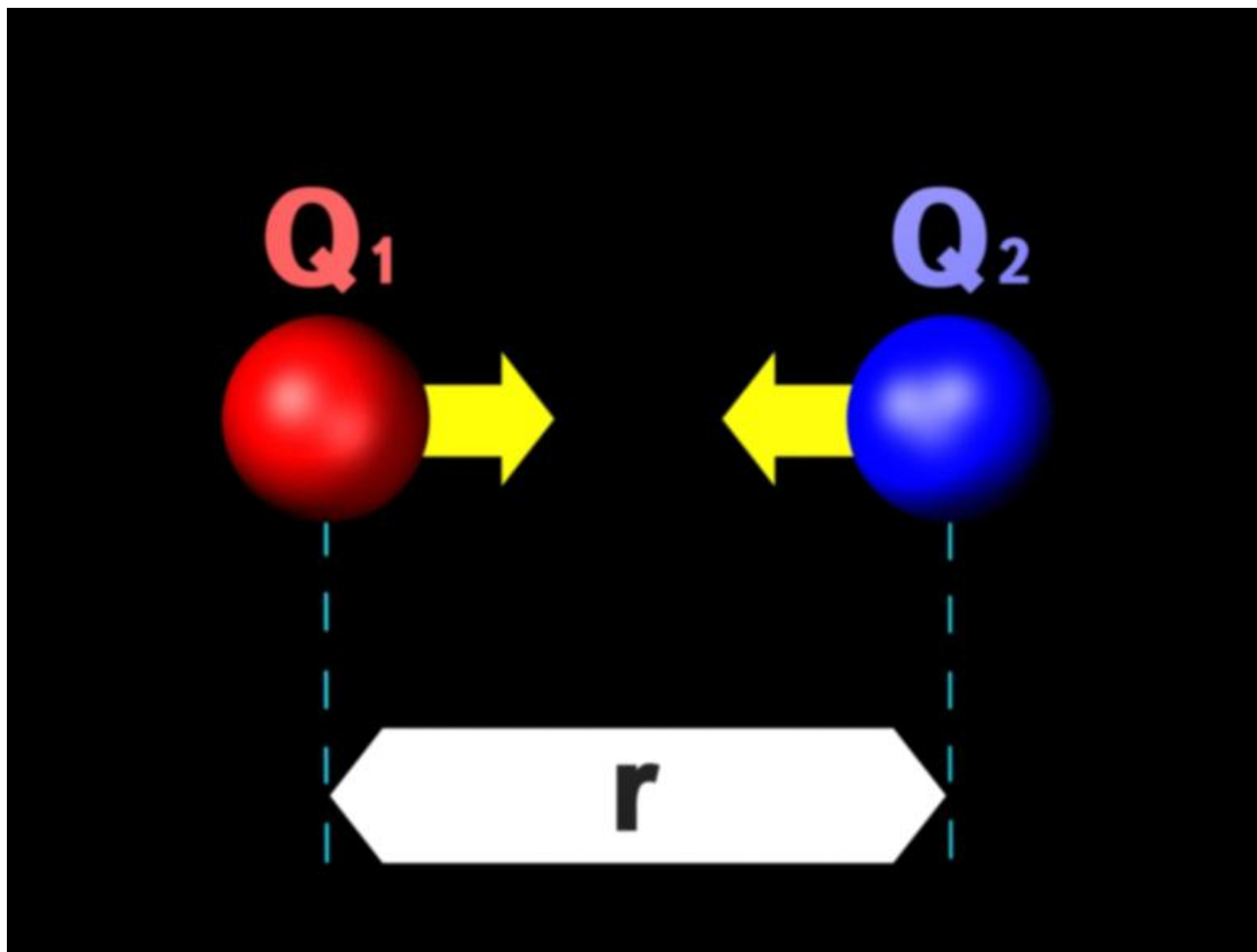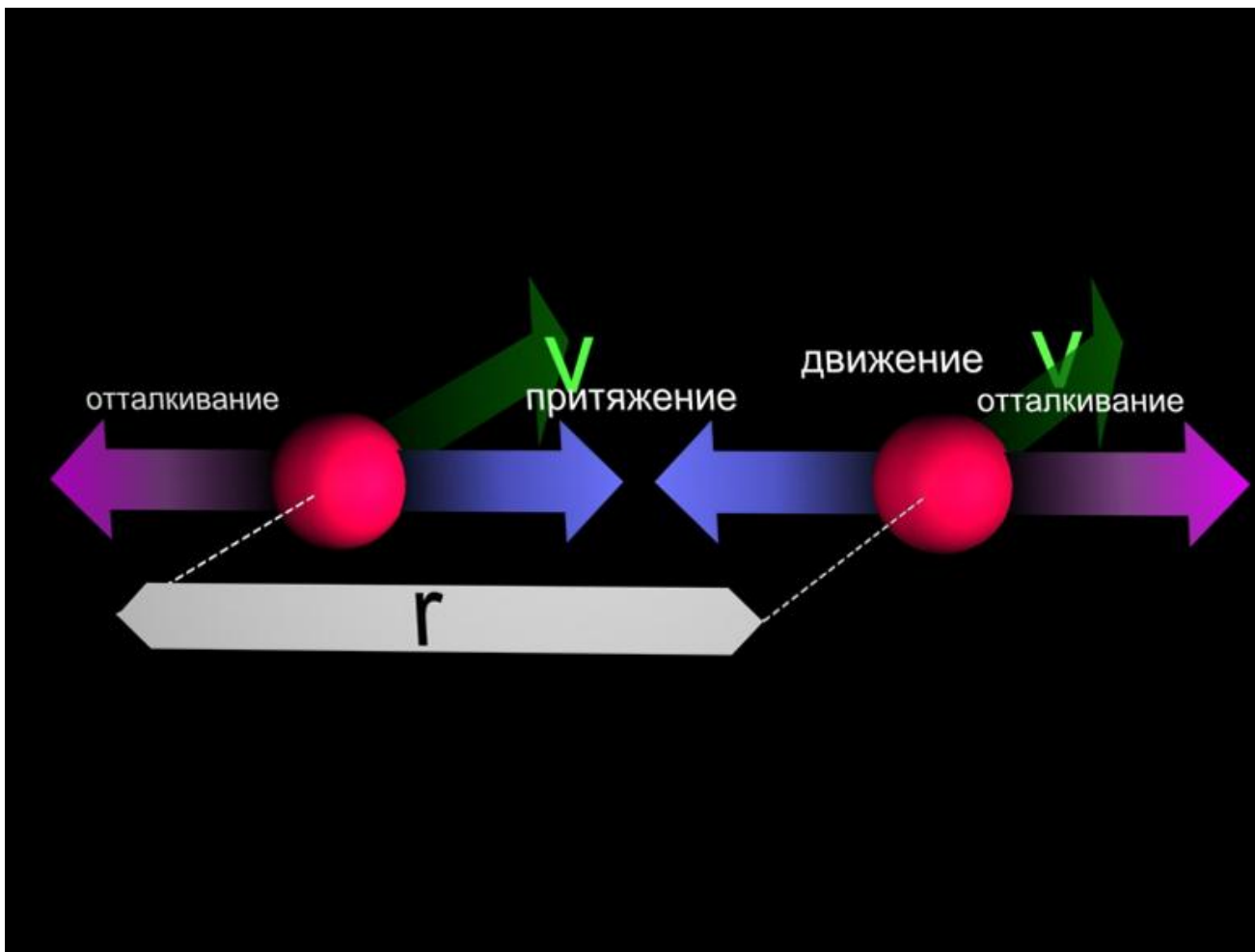# ELEKTROSTATIKA

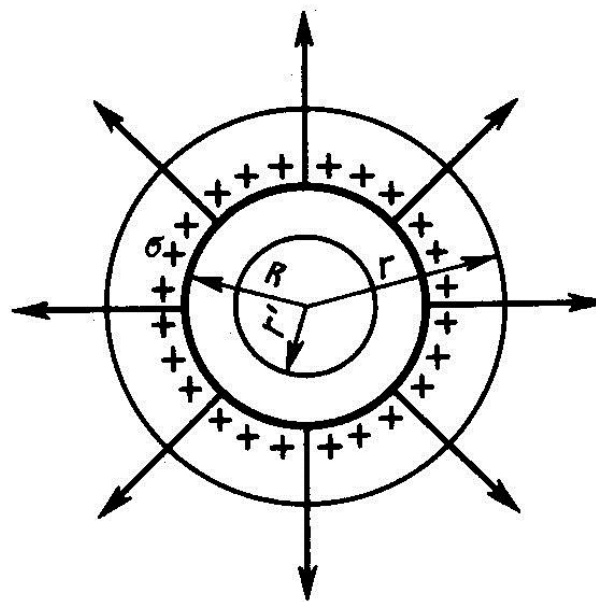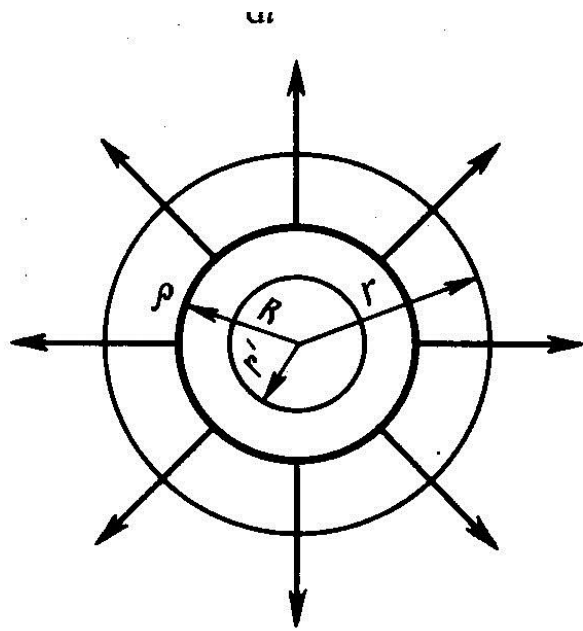Musbat zaryadning kuch chiziqlari

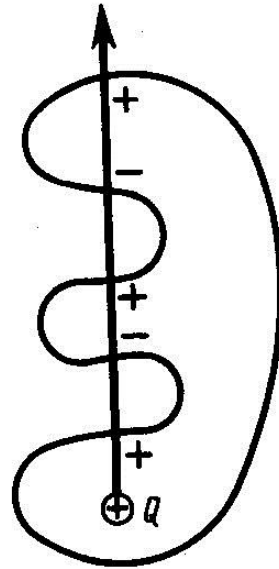Dipolning kuch chiziqlari

Elektr maydonining kuchi

Zaryadlarning o'zaro tasiri
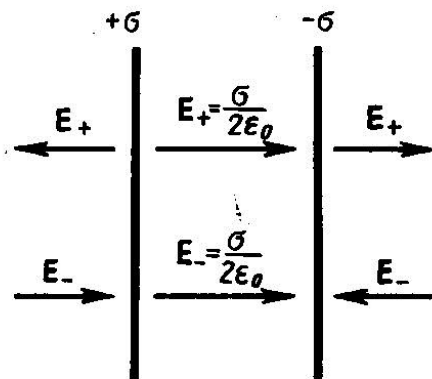
Zaryadlarning o'zaro tasiri

Sferik sirt orqali elektr maydon oqimi

Ixtiyoriy shaklga ega bo'lgan sirt orqali oqim

$$E = \frac{\sigma}{\varepsilon_0} \qquad\qquad E = \frac{\sigma}{2\varepsilon_0}$$

Yakka va parallel tekisliklarning elektr maydon
kuchlanganligi

$$dA = \frac{1}{4\pi\varepsilon_0} \frac{q \cdot q_0}{r^2} dr$$

$$A_{MN} = \int dA = \frac{1}{4\pi\varepsilon_0} qq^0 \int_{r_m}^{r_N} \frac{dr}{r^2} = \frac{1}{4\pi\varepsilon_0} \frac{qq^0}{r_m} - \frac{1}{4\pi\varepsilon_0} \frac{qq^0}{r_N}$$

$$E_P = \frac{1}{4\pi\varepsilon_0} \frac{q \cdot q_0}{r}$$

Elektr maydonida zaryadni ko'chirishda bajarilgan ish

Potensial energiyani maydonga kiritilgan zaryadga nisbati bilan o'lchanadigan kattalikka maydon potensiali deyiladi

$$\varphi = \frac{E_P}{q_0}$$

$$\varphi = \frac{E_P}{q_0} = \frac{1}{4\pi\varepsilon_0}\frac{q}{r}$$

(2) Nuqtaviy zaryadning potensialiи

Ekvipotensial sirt
Potensiallari teng bo'lgan nuqtalarning geometrik o'rinlaridan tashkil topgan sirt ekvipotensial sirt deyiladi. Ekvipotensial sirt bo'ylab zaryadni ko'chirishda bajarilgan ish 0 ga teng bo'ladi.
Elektr maydonning potensiali va kuchlanganligi orasidagi bog'lanish.

$$E = -\frac{d\varphi}{dr} \qquad \frac{d\varphi}{dr} = \text{grad}\varphi \text{ - potensial gradienti}$$

$$E = -\text{grad}\varphi$$