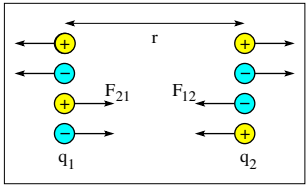
Coulomb's Law (1)

Electrostatic force between two charged particles:

$$F = \frac{1}{4\pi\epsilon_0}\frac{|q_1 q_2|}{r^2} = k\frac{|q_1 q_2|}{r^2}$$



Permittivity constant: $\epsilon_0 = 8.854 \times 10^{-12}\mathrm{C}^2\mathrm{N}^{-1}\mathrm{m}^{-2}$
Coulomb constant: $k = 8.99 \times 10^{9}\mathrm{Nm}^2\mathrm{C}^{-2}$

Action-reaction pair of forces: $\vec{F}_{21} = -\vec{F}_{12}$.

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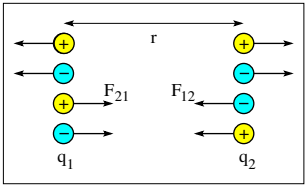

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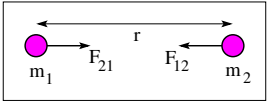
Newton's law of gravitation (for comparison)

Gravitational force between two massive particles:

$$F = G\frac{m_1 m_2}{r^2}$$



Gravitational constant: $G = 6.673 \times 10^{-11}\mathrm{Nm^2kg^{-2}}$