UNOPAR Electrodynamics Coulomb's Law and Electric Field Summary
Coulomb's Law for Point Charges

- Image representation:

- Formula, where **k** is a constant with value of **8.9875 × 10⁹ N·m²/C²**:

$$F = k_e \frac{qQ}{r^2}$$

- More about Coulomb's constant (formula):

$$k = \frac{1}{4\pi\epsilon}$$

Where ε is the permittivity.

- **Permittivity**:
Of free space:

$$\epsilon_0 = 8.85419 \times 10^{-12} \frac{C^2}{(Nm^2)}$$

If a dielectric material is present:

$$\epsilon = \kappa\epsilon_0$$

For k, we have its value as 1 in the vacuum and 1.0006 in the air.