

# Electricity & Magnetism Notes

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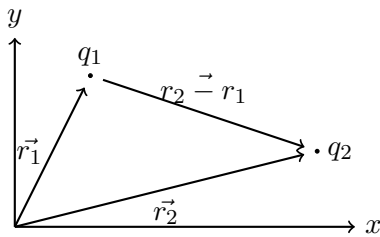
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## 1 ???

There exists **charge**

- 2 varieties  $(+, -)$
- Conserved
- Can be transferred by rubbing (triboelectric effect)
- Can produce both attractive and repulsive forces
- Quantized (discrete amounts)
  - Smallest charge:  $e = 1.6 \times 10^{-19}C$ . A proton has charge  $+e$ , and an electron has charge  $-e$ . (No idea why these are the same)

### 1.1 Coulomb's Law



$$\vec{F}_{12} = \frac{kq_1q_2}{r_{12}^2} \hat{r}_{12} \quad (1)$$

## 2 Constants

$m_e$ :  $9.11 \times 10^{-31}kg$

$q_e$ :  $1.60 \times 10^{-19}C$