

PHYS12 19

Gullo

20252

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- (J)

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-
- (V) $1 \text{ V} = 1 \text{ J/C}$
-

- AB

-

$$\Delta V = \frac{\Delta PE}{q} \quad (1)$$

$$\Delta PE = q\Delta V \quad (2)$$

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-

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(eV)1V

$$1 \text{ eV} = (1.60 \times 10^{-19} \text{ C})(1 \text{ V}) \quad (3)$$

$$= 1.60 \times 10^{-19} \text{ J} \quad (4)$$

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- keV, MeV, GeV
- 12V12eV



$$E = +$$



$$\Delta = -\Delta = -q\Delta V$$



$$V_{AB} = Ed \quad (5)$$

$$E = \frac{V_{AB}}{d} \quad (6)$$

- $E(\text{V/mN/C})$
- $d_{AB}(\text{m})$
- $V_{AB}(\text{V})$

$$E = -\frac{\Delta V}{\Delta s} \quad (7)$$

$\Delta s \Delta V$

- E
-
- $V/m = N/C$
-

Qr

$$V = k \frac{Q}{r} \quad (8)$$

$$k = 9.0 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2$$

-

- r

- $r = \infty V = 0$

- $E = k \frac{Q}{r^2} E = -\frac{dV}{dr}$

$$V = k \sum_i \frac{Q_i}{r_i} \quad (9)$$

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(C)

$$C = \frac{Q}{V} \quad (10)$$

- (F) 1 F = 1 C/V
- pF
-
- /

/

$$C = \epsilon_0 \frac{A}{d} \quad (11)$$

- $\epsilon_0 = 8.85 \times 10^{-12} \text{ F/m}$

- A

- d

- \rightarrow

- \rightarrow

$$C = \kappa \epsilon_0 \frac{A}{d} \quad (12)$$

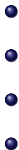
κ

- $\kappa \approx 1.00059$
- $\kappa \approx 2 - 4$
- $\kappa \approx 4 - 10$
- $\kappa \approx 2.1$
- $\kappa \approx 80$

$$\frac{1}{C_S} = \sum_i \frac{1}{C_i} \quad (13)$$



$$C_P = \sum_i C_i \quad (14)$$



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$$E = \frac{QV}{2} \quad (15)$$

$$E = \frac{CV^2}{2} \quad (16)$$

$$E = \frac{Q^2}{2C} \quad (17)$$

-
- (J)
-
-



$$u = \frac{1}{2} \epsilon_0 E^2 \quad (\text{J/m}^3) \quad (18)$$

$$v = \sqrt{\frac{2qV}{m}} = 1.17 \times 10^8 \text{ m/s} \quad (19)$$

$$5m^20.1mm(\kappa = 2.1)$$

$$C = (2.1)(8.85 \times 10^{-12}) \frac{5}{0.1 \times 10^{-3}} \quad (20)$$

$$= 0.929 F \quad (21)$$

180F120V

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- $Q = CV$
- $E = \frac{1}{2}CV^2$
- ($F=10^{-6}F$)

- $V = \frac{PE}{q}$
- $\Delta V = \frac{\Delta PE}{q}$
- $E = \frac{V}{d}$
- $-E = -\frac{\Delta V}{\Delta s}$
- $V = k \frac{Q}{r}$
- $C = \frac{Q}{V}$
- $C = \kappa \epsilon_0 \frac{A}{d}$
- $\frac{1}{C_S} = \sum \frac{1}{C_i}$
- $C_P = \sum C_i$
- $E = \frac{1}{2} CV^2$