

1. SINAVLA İLGİLİ SABİT VE FORMÜLLER

$$1\text{mW} = 10^{-3}\text{W} = 10^{-3}\text{ J s}^{-1}$$

$$1\text{nm} = 10^{-9}\text{m}$$

$$1\text{eV} = 1.602 \times 10^{-19}\text{ J}$$

$$h = 6.63 \times 10^{-34}\text{ J s}$$

$$\hbar = 1.05 \times 10^{-34}\text{ J s}$$

$$c = 3.0 \times 10^8\text{ m s}^{-1}$$

$$hc = 2.0 \times 10^{-25}\text{ J m}$$

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

$$e = 1.602 \times 10^{-19}\text{ C}$$

$$\lambda\nu = c$$

$$\epsilon_0 = 8.854 \times 10^{-12}\text{ Cs}^2\text{kg}^{-1}\text{m}^{-3}$$

$$E = h\nu$$

$$\lambda = h/p$$

$$l_n = mrv = n\hbar$$

$$r_n = n^2 a_0$$

$$a_0 = 5.29 \times 10^{-11}\text{ m}$$

$$E_n = -\frac{1}{n^2} \frac{Z^2 m e^4}{8\epsilon_0^2 h^2} = -\frac{1}{n^2} (2.18 \times 10^{-18}\text{ J})$$

$$R = \frac{m e^4}{8\epsilon_0^2 h^3 c} = 109,678\text{ cm}^{-1}$$

$$E = \frac{\hbar^2 k^2}{2m}$$

$$k = \frac{2\pi}{\lambda}$$

$$\psi(x) = A \cos(kx) + B \sin(kx)$$

$$E_n = \frac{n^2 \hbar^2}{8ma^2}$$

$$\psi(0 \leq x \leq a) = \left(\frac{2}{a}\right)^{1/2} \sin\left(\frac{n\pi x}{a}\right)$$

$$\Delta x \Delta p \geq \hbar/2$$

Uzunluğu "a" olan bir kutudaki parçacık için,
x = 0 ve x = a için

$$\langle x^2 \rangle = \frac{a^2}{4} \left[\frac{4}{3} - \frac{2}{(n\pi)^2} \right], \quad \langle x \rangle = \frac{a}{2}$$

$$\hat{x} = x$$

$$\hat{p} = \frac{\hbar}{i} \frac{d}{dx}$$

$$\hat{l}_z = \frac{\hbar}{i} \frac{d}{d\phi}$$

$$e^{\pm i\theta} = \cos\theta \pm i \sin\theta$$

$$\int \cos x \, dx = \sin x$$

$$\int \sin x \, dx = -\cos x$$

$$\int \sin^2 y \, dy = \frac{1}{2} y - \frac{1}{4} \sin(2y)$$

$$\int \cos^2 y \, dy = \frac{1}{2} y + \frac{1}{4} \sin(2y)$$

$$\int_0^{\infty} e^{-ax} \, dx = \frac{1}{a} \quad [a > 0]$$

$$\int_0^{\infty} x^n e^{-ax} \, dx = \frac{n!}{a^{n+1}} \quad [n \text{ pozitif tamsayı}, a > 0]$$