

Konstante

$$c = 3 \cdot 10^8 \text{ m s}^{-1}$$

$$e = 1,6 \cdot 10^{-19} \text{ C}$$

$$N_A = 6,022 \cdot 10^{23} \text{ mol}^{-1}$$

$$k_B = 1,38 \cdot 10^{-23} \text{ J K}^{-1}$$

$$G = 6,67 \cdot 10^{-11} \text{ N m}^2 \text{ kg}^{-2}$$

$$R = 8,314 \text{ J mol}^{-1} \text{ K}^{-1}$$

$$\epsilon_0 = 8,854 \cdot 10^{-12} \text{ C}^2 \text{ N}^{-1} \text{ m}^{-2}$$

$$\mu_0 = 4\pi \cdot 10^{-7} \text{ N A}^{-2}$$

$$u = 1,66 \cdot 10^{-27} \text{ kg}$$

$$k_0 = 9 \cdot 10^9 \text{ N m}^2 \text{ C}^{-2}$$

$$\sigma = 5,67 \cdot 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$$

Kinematika

$$s = v_0 t + \frac{1}{2} a t^2 \quad \varphi = \omega_0 t + \frac{1}{2} \alpha t^2$$

$$v = v_0 + a t \quad \omega = \omega_0 + \alpha t$$

$$v = \omega r \quad a = \alpha r$$

Dinamika

$$\Sigma F = m a \quad \Sigma M = I \alpha \quad I = m r^2$$

$$M = F r \sin \varphi \quad p = m v \quad L = I \omega$$

$$W = F s \quad W = M \varphi$$

$$P = Fv \quad P = M\omega$$

$$E_k = \frac{1}{2}mv^2 \quad E_k = \frac{1}{2}I\omega^2 \quad E_p = mgh$$

$$E_{el} = \frac{1}{2}kx^2 \quad F_{el} = -kx$$

$$\frac{F}{S} = Y \frac{\Delta l}{l}$$

$$F_{cp} = \frac{mv^2}{r} \quad F_g = G \frac{m_1 m_2}{r^2} \quad F_{tr} = \mu N$$

Titranje

$$f = \frac{1}{T} \quad \omega = 2\pi f$$

$$x = A \sin(\omega t + \varphi) \quad v = A\omega \cos(\omega t + \varphi) \quad a = -A\omega^2 \sin(\omega t + \varphi)$$

$$T = 2\pi \sqrt{\frac{m}{k}} \quad T = 2\pi \sqrt{\frac{l}{g}}$$

Fluidi

$$\rho = \frac{m}{V} \quad U = \rho_{\text{flu}} g V_{\text{uro}}$$

$$q = \frac{\Delta V}{\Delta t} \quad q = Sv \quad p = \frac{F}{S}$$

$$p_1 + \rho g h_1 + \frac{1}{2}\rho v_1^2 = p_2 + \rho g h_2 + \frac{1}{2}\rho v_2^2$$

Toplina

$$\Delta L = \alpha L_0 \Delta T \quad \Delta V = \beta V_0 \Delta T$$

$$Q = mC\Delta T \quad Q = mL$$

$$Q = \frac{kAt\Delta T}{L}$$

$$Q = e\sigma T^4 At$$

Idealni plin

$$pV = nRT \quad n = \frac{N}{N_A} \quad n = \frac{m}{M}$$

$$\overline{E_k} = \frac{3}{2}kT \quad R = kN_A$$

$$m = \frac{DA\Delta Ct}{L}$$

Termodinamika

$$Q = \Delta U + W$$

$$W = p\Delta V \quad W = nRT \ln\left(\frac{V_k}{V_p}\right) \quad W = \frac{3}{2}nR(T_p - T_k)$$

$$p_p V_p^\gamma = p_k V_k^\gamma \quad \gamma = \frac{c_p}{c_v}$$

$$\eta = \frac{|W|}{|Q_H|} \quad f = \frac{|Q_C|}{|W|} \quad f = \frac{|Q_H|}{|W|}$$

$$\Delta S = \frac{\Delta Q}{T}$$

Valovi i zvuk

$$y = A \sin \left(\frac{2\pi t}{T} - \frac{2\pi x}{\lambda} \right)$$

$$v = \sqrt{\frac{F}{m/L}} \quad v = \sqrt{\frac{\gamma k T}{m}} \quad v = \sqrt{\frac{B}{\rho}} \quad v = \sqrt{\frac{Y}{\rho}}$$

$$I = \frac{P}{4r^2\pi} \quad \beta = 10 \text{ dB} \log \left(\frac{I}{I_0} \right)$$

$$f_o = f_s \frac{1 \pm \frac{v_o}{v}}{1 \mp \frac{v_s}{v}} \quad f_n = n \left(\frac{v}{2L} \right) \quad f_n = n \left(\frac{v}{4L} \right)$$

Elektromagnetski valovi

$$c = \lambda f \quad E = cB \quad c = \frac{1}{\sqrt{\mu_0 \epsilon_0}}$$

$$\bar{u} = \frac{1}{2} \left(\epsilon_0 E_{\text{ef}}^2 + \frac{1}{\mu_0} B_{\text{ef}}^2 \right) \quad E_{\text{ef}} = \frac{E_0}{\sqrt{2}} \quad B_{\text{ef}} = \frac{B_0}{\sqrt{2}}$$

$$f_o = f_s \left(1 \pm \frac{v}{c} \right) \quad \bar{S} = \bar{S}_0 \cos^2 \theta$$

Geometrijska optika

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{f} \quad m = -\frac{b}{a} \quad m = \frac{y'}{y} \quad f = \frac{R}{2}$$

$$n = \frac{c}{v} \quad n_1 \sin \theta_1 = n_2 \sin \theta_2 \quad d' = d \frac{n_2}{n_1}$$

$$\tan \theta_B = \frac{n_2}{n_1} \quad D = \frac{1}{f} \quad M = -\frac{f_o}{f_e}$$

Fizička optika

$$\Delta l = m\lambda \quad \Delta l = \left(m + \frac{1}{2} \right) \lambda \quad \sin \theta = \frac{m\lambda}{d} \quad \sin \theta = \frac{(m + \frac{1}{2})\lambda}{d} \quad \sin \theta = \frac{m\lambda}{w}$$