

$\delta X = X - X_0$	$X_0 \in \langle X - \Delta X, X + \Delta X \rangle$	$\bar{T} = \frac{T_1 + T_2 + T_3 + \dots + T_n}{n}$	$s_T = \sqrt{\frac{(T_1 - \bar{T})^2 + (T_2 - \bar{T})^2 + \dots + (T_n - \bar{T})^2}{n - 1}}$
$s_{\bar{T}} = \frac{s_T}{\sqrt{n}}$	$F = f(A_1, A_2, \dots, A_m)$		$\Delta F = \pm \sum_{i=1}^m \left \frac{\partial f(A_1, A_2, \dots, A_m)}{\partial A_i} \right \cdot \Delta A_i $
$F = \text{const} \cdot A^a \cdot B^b \cdot C^c \cdot \dots$		$\Delta F = \pm F \cdot \left[\left a \cdot \frac{\Delta A}{A} \right + \left b \cdot \frac{\Delta B}{B} \right + \left c \cdot \frac{\Delta C}{C} \right + \dots \right]$	

$w = \frac{Q_p}{V_{O_2}}$	$RQ = \frac{V_{CO_2}}{V_{O_2}}$	$P = i^2 \cdot R$	$v = \frac{\Delta V}{t}$	$P = v \cdot w$
$\log \{Q\} = 5,44 + 0,756 \cdot \log \{m\} \pm 0,05$		$\Phi = \Phi_K + \Phi_R + \Phi_P + \Phi_T$		
$\Phi_T = -\lambda \cdot S \cdot \frac{\Delta T}{\Delta x}$	$\Phi_K = \alpha \cdot S \cdot (T_c - T_o)$	$\Phi_R = \sigma \cdot \varepsilon \cdot S \cdot (T_c^4 - T_o^4)$	$\Phi_P = k \cdot S \cdot (p_s - p_o)$	
$\Delta E_w = Q^\downarrow + W^\downarrow$	$\Delta U = Q_V$	$\Delta H = Q_p$	$p_i \cdot V = n_i \cdot R \cdot T$	

$\frac{dn}{dt} = -D \cdot S \cdot \frac{dc}{dx}$	$D = \frac{k \cdot T}{6 \cdot \pi \cdot r \cdot \eta}$	$\overline{\Delta x^2} = 2 \cdot D \cdot t$	$P = \frac{D}{dx}$
$\frac{dn}{dt} = P \cdot S \cdot (c_1 - c_2)$	$c_2 = \frac{c_0}{2} \cdot (1 - e^{-C \cdot D \cdot t})$	$C = \frac{2 \cdot A}{V \cdot dx}$	$\ln\left(\frac{c_0}{c_0 - 2 \cdot c_2}\right) = C \cdot D \cdot t$
$\pi = f \cdot c_m \cdot R \cdot T$	$\mu_i = \left(\frac{\partial G_i}{\partial n_i}\right)_{T,p,n_j \text{ dla } j \neq i}$	$H = U + p \cdot V$	$G = H - T \cdot S$
		$F = U - T \cdot S$	

$W = \sigma \cdot \Delta S$	$\sigma = \frac{F}{l}$	$\sigma = \frac{\rho \cdot V \cdot g}{2 \cdot \pi \cdot r \cdot n}$	$\frac{\sigma}{\sigma_0} = \frac{n_0 \cdot \rho}{n \cdot \rho_0}$	$\sigma = \frac{r \cdot h \cdot \rho \cdot g}{2 \cdot \cos(\alpha)}$	$\Delta p = \frac{2 \cdot \sigma}{R}$
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$F = \eta \cdot S \cdot \frac{\Delta v}{\Delta x}$	$R = 6 \cdot \pi \cdot r \cdot v \cdot \eta$	$\Delta V = \frac{\pi \cdot r^4 \cdot \Delta t}{8 \cdot l \cdot \eta} \cdot \Delta p$	$\eta = \frac{2 \cdot r^2 \cdot g \cdot (\rho - \rho_c)}{9 \cdot v}$
$\eta_{wt} = \frac{\eta}{\eta_0} - 1$	$[\eta] = \lim_{c \rightarrow 0} \left(\frac{\eta_{wt}}{c}\right)$	$\frac{\eta}{\eta_0} = 1 + 2,5 \cdot \Phi$	$[\eta] = 2,5 \cdot \frac{N_A}{M} \cdot v_{cz}$
$r = \sqrt[3]{\frac{3 \cdot M}{10 \cdot \pi \cdot N_A} \cdot [\eta]}$	$\frac{\eta}{\eta_0} = \frac{t}{t_0} \cdot \frac{\rho}{\rho_0}$	$\frac{\rho}{\rho_0} = 1 + 0,23 \cdot c$	

$E = E_{el} + E_{osc} + E_{rot}$	$h \cdot v = E_2 - E_1 = \Delta E_{el} + \Delta E_{osc} + \Delta E_{rot}$	$P = P_0 \cdot e^{-k \cdot d}$	$k = a_\lambda \cdot c$	$P = P_0 \cdot e^{-a_\lambda \cdot c \cdot d}$
$\tau = \frac{P}{P_0}$	$\tau = \frac{P}{P_0}$	$\tau = e^{-a_\lambda \cdot c \cdot d}$	$A = -\log(\tau)$	$\varepsilon_\lambda = a_\lambda \cdot \log(e)$

$T = \frac{1}{f}$	$\omega = \frac{2 \cdot \pi}{T}$	$x(t) = A \cdot \sin(\omega \cdot t + \varphi)$	$v(t) = A \cdot \omega \cdot \cos(\omega \cdot t + \varphi)$
$a(t) = -A \cdot \omega^2 \cdot \sin(\omega \cdot t + \varphi) = -\omega^2 \cdot x(t)$		$F_{wyp}(t) = m \cdot a(t) = -m \cdot A \cdot \omega^2 \cdot \sin(\omega \cdot t + \varphi) = -\frac{k}{m \cdot \omega^2} \cdot x(t)$	
$F_{wyp}(t) = -k \cdot x(t)$			

$\omega = \sqrt{\frac{k}{m}}$	$T = 2 \cdot \pi \cdot \sqrt{\frac{m}{k}}$	$T = 2 \cdot \pi \cdot \sqrt{\frac{\ell}{g}}$	$T = 2 \cdot \pi \cdot \sqrt{\frac{I}{m \cdot g \cdot h}}$
$E_{Kinetyczna} = \frac{m \cdot v^2}{2} = \frac{m}{2} \cdot A^2 \cdot \omega^2 \cdot \cos^2(\omega \cdot t + \varphi)$ $E_{Kin Maks}$		$E_{Potencjalna} = \frac{m}{2} \cdot A^2 \cdot \omega^2 \cdot \sin^2(\omega \cdot t + \varphi)$ $E_{Pot Maks}$	
$A(t) = A \cdot e^{-\delta \cdot t}$	$\omega' = \sqrt{\frac{k}{m} - \delta^2}$	$\omega_{wym} = \omega$	$g = 4 \cdot \pi^2 \cdot \frac{\ell}{T^2}$

$p = \frac{F}{S}$	$\rho = \frac{m}{V}$	$\gamma = \frac{m \cdot g}{V}$	$p = \rho \cdot g \cdot h$
$F_{parcia} = p \cdot S = S \cdot \rho \cdot g \cdot h$		$F_{Wyporu} = V_{Zanurzonej Cz\acute{e}ści} \cdot \rho_{Cieczy} \cdot g$	

$Q = m \cdot c_{wt} \cdot \Delta T$	$c_{wt} = \frac{Q}{m \cdot \Delta T}$	$Q = m \cdot C_{faz}$	$C_{faz} = \frac{Q}{m}$
$W^\downarrow = -p \cdot \Delta V$	$\Delta U = Q^\downarrow + W^\downarrow$		

$y(x, t) = A \cdot \sin\left[\omega \cdot \left(t - \frac{x}{v_{fali}}\right)\right] = A \cdot \sin\left[2 \cdot \pi \cdot \left(\frac{t}{T} - \frac{x}{T \cdot v_{fali}}\right)\right] = A \cdot \sin\left[2 \cdot \pi \cdot \left(\frac{t}{T} - \frac{x}{\lambda}\right)\right] = A \cdot \sin(\omega \cdot t - k \cdot x)$				
$\omega = \frac{2 \cdot \pi}{T}$	$k = \frac{2 \cdot \pi}{\lambda}$	$\lambda = v_{fali} \cdot T$	$I = \frac{E}{S \cdot \Delta t} = \frac{P}{S}$	$I = \frac{P}{4 \cdot \pi \cdot R^2}$
$v_{fali} = \sqrt{\frac{F_n}{\mu}}$	$v_{fali} = \sqrt{\frac{B}{\rho}}$	$d = n \cdot \lambda$	$d = (2 \cdot n + 1) \cdot \frac{\lambda}{2}$	$L = \frac{1}{4} \cdot \lambda = \frac{1}{4} \cdot \frac{v_{fali}}{f}$
$\frac{\sin(\alpha)}{\sin(\beta)} = \frac{v_\alpha}{v_\beta} = \frac{\lambda_\alpha}{\lambda_\beta} = const$	$\frac{v_\alpha}{\lambda_\alpha} = \frac{v_\beta}{\lambda_\beta} = f = const$	$L = 10 \cdot \log\left(\frac{I}{I_0}\right)$	$f' = f \cdot \frac{v_{d\acute{z}} \pm v_{ob}}{v_{d\acute{z}} \mp v_{zr}}$	

Wartości wybranych stałych fizycznych:

Liczba Avogadro	$N_A = 6,02 \cdot 10^{23} \frac{1}{mol}$
Stała gazowa	$R = 8,31 \frac{J}{mol \cdot K}$
Stała Boltzmanna	$k_B = \frac{R}{N_A} = 1,38 \cdot 10^{-23} \frac{J}{K}$
Ładunek elektronu	$e = 1,60 \cdot 10^{-19} C$
Masa spoczynkowa elektronu	$m_e = 9,11 \cdot 10^{-31} kg$
Stała Faradaya	$F = e \cdot N_A = 96500 \frac{C}{mol}$
Przyspieszenie ziemskie	$g = 9,81 \frac{m}{s^2}$
Podstawa logarytmu naturalnego	$e \approx 2,72$
Przenikalność magnetyczna próżni	$\mu_0 = 4 \cdot \pi \cdot 10^{-7} \frac{T \cdot m}{A}$
Przenikalność elektryczna próżni	$\epsilon_0 = 8,85 \cdot 10^{-12} \frac{C^2}{N \cdot m^2}$

Pi	$\pi \approx 3,14$
Stała Plancka	$h = 6,63 \cdot 10^{-34} J \cdot s$
Prędkość światła w próżni	$c = 3,00 \cdot 10^8 \frac{m}{s}$
Prędkość dźwięku w powietrzu	$v_d = 331 \frac{m}{s}$
Stała Stefana-Boltzmanna	$\sigma = 5,67 \cdot 10^{-8} \frac{W}{K^4 \cdot m^2}$
Stała Wiena	$b = 2,90 \cdot 10^{-3} m \cdot K$
Progowe natężenie dźwięku dla 1 kHz	$10^{-12} W/m^2$
Progowe ciśnienie akustyczne dla 1 kHz	$2 \cdot 10^{-5} Pa$
Elektronowolt	$1 eV = 1,6 \cdot 10^{-19} J$