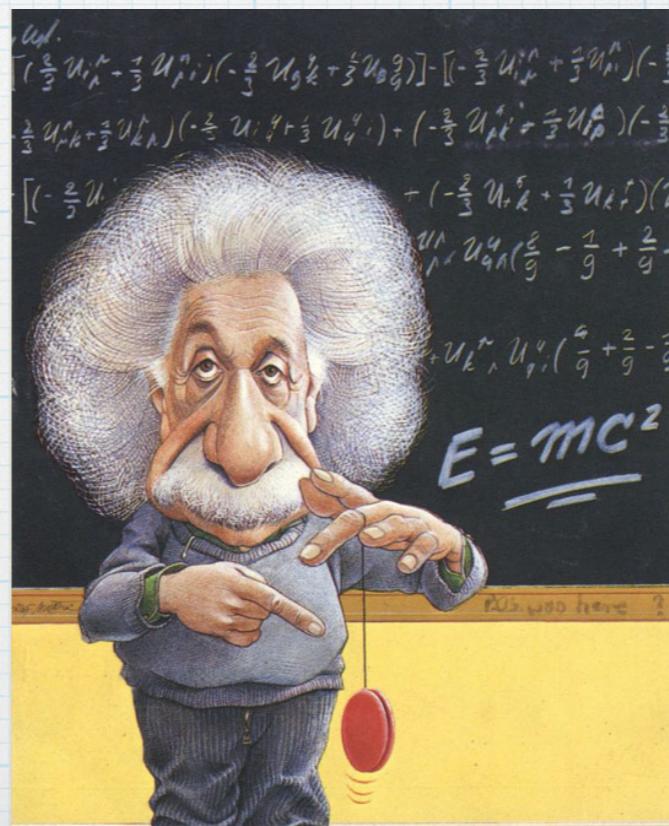


$$\begin{aligned}
& -\frac{1}{2m} \frac{d^2\psi}{dx^2} + V\psi = E\psi \quad \Psi e^{-\frac{i}{\hbar}kx} \quad k = \frac{\omega}{4\pi \epsilon_0 \epsilon_r} \quad v_k = \sqrt{\frac{2M_m}{R_e}} \quad \vec{F}_m = \vec{B} \vec{I} l = \frac{\mu_0 I_1 I_2}{2\pi a} l \\
& U_{ef} = \frac{U_m}{e} \quad E = \hbar \omega \quad \Delta t = \frac{\Delta t'}{\sqrt{1-\frac{v^2}{c^2}}} \quad 4\pi r^2 \quad X_L = \frac{U_m}{I_m} = \omega L = 2\pi f L \quad F_g = \frac{m_1 m_2}{r^2} \gamma \\
& E = k \frac{Q_1 Q_2}{r^2} \quad U = \frac{W_{AB}}{e} = \frac{|E_{PA} - E_{PB}|}{e} = |\varphi_A - \varphi_B| \quad T = \frac{4\pi n_1 n_2}{(n_2 + n_1)^2} \quad R_m = \frac{C}{T} \quad k = \pm \sqrt{\frac{2m}{\hbar^2}} (E - V_0) \\
& \vec{B} = \mu_0 \frac{NI}{l} \sqrt{2} \quad v = \frac{nh}{2\pi r m_e} \quad \Phi_E = \frac{F_e}{\Phi_0} = k \frac{Q}{r^2} \Phi \quad m = N \cdot m_0 = \frac{Q}{N_A} \frac{M_m}{N_A} \quad E = \frac{E_c}{a} \int_{-a/L}^{+a/L} \sin(\omega t + \phi) dy \\
& K = \rho \frac{l^3}{2m} m_0 = \frac{M_m}{N_A} = \frac{M_r \cdot 10^{-3}}{N_A} \quad l_t = l_0 (1 + \alpha \Delta t) \quad I = \frac{U_e}{R + R_i} \quad 2 \frac{\sin \alpha}{\sin \beta} = \frac{V_1}{V_2} = \frac{m_2}{m_1} \quad V = \frac{1}{\sqrt{\epsilon_r \mu_r}} = \frac{C}{\sqrt{\epsilon_r \mu_r}} \\
& \lambda = \frac{\hbar}{V2eUm_e} \quad R = \rho \frac{l}{S} \quad E = mc^2 \quad \frac{\sin \alpha}{\sin \beta} = \frac{V_1}{V_2} = \frac{m_2}{m_1} \quad V = \frac{1}{\sqrt{\epsilon_r \mu_r}} = \frac{C}{\sqrt{\epsilon_r \mu_r}} \\
& f_0 = \frac{1}{2\pi} \sqrt{\frac{g}{\epsilon}} \quad \Psi(x) = \sqrt{2/L} \sin \frac{n\pi x}{L} \quad \beta = \frac{\Delta I_c}{I_c} \quad \phi_e = \frac{\Delta E}{\Delta t} \frac{m_1}{x} + \frac{m_2}{x'} = \frac{m_2 - m_1}{n} \\
& \oint \vec{B} d\vec{l} = \mu_0 \iint \vec{J} d\vec{S} \quad \vec{S} = \frac{1}{\mu_0} (\vec{E} \times \vec{B}) \quad \Delta I_B \quad E_k = \frac{\hbar^2}{8mL^2} h^2 \\
& C(s) \quad V_k = \sqrt{\frac{3kT}{m_0}} = \sqrt{\frac{3kTN_A}{M_m}} = \sqrt{\frac{3R_m T}{M_r \cdot 10^{-3}}} \quad E = \frac{\hbar k^2}{2m} \quad 1 \text{ pc} = \frac{1 \text{ AU}}{r} \quad S = \frac{U}{I} \quad F_V = \oint \frac{F_h}{R} d\vec{S} = Q^* \\
& \gamma = \frac{ln_2}{T} \quad F_h = Sh \rho g \quad f_0 = \frac{1}{2\pi \sqrt{\rho_1}} \quad \sigma = \frac{Q}{S_T} \quad M = \vec{F} d\vec{l} \cos \alpha \quad R = \frac{U}{I} \quad F_h = \oint \frac{F_h}{R} d\vec{S} = Q^* \\
& \left(\frac{E_e}{e} \right) = \frac{2 \cos \vartheta_1 \cos \vartheta_2}{T}
\end{aligned}$$

Fizika

Zanimljivosti fizike

- * Znam da svim tinejđerima fizika zvuči kao dosadan predmet, ali u ovoj prezentaciji zajedno ćemo vidjeti novo zabavno lice fizike
 - * U ovoj prezentaciji ćete saznati odgovore na zanimljiva pitanja



Ovo su neke od zanimljivosti:

- * Kako su u dawna vremena provjerili je li kruna od zlata?
- * Kako je nastao metar?
- * Zanimljivosti o poznatim fizičarima

Kako su u davna vremena vidjeli je li kruna od zlata?

- * Uronili bi grumen zlata koji ima istu masu kao i kruna
- * Da je kruna od zlata, obujmovi vode i zlata trebali bi biti jednaki
- * P.S. Arhimed je došao do tog načina je li kruna od zlata, tako što je primjetio da kada uđe u kadu, obujam vode se poveća te je od sreće trčao gol po gradu



Kako je nastao metar?

- * U prošlosti su mjerili dužinu duljine na mnoge načine, ali htijeli su naći neku jedinicu koja će biti ista
- * Dogovorili su se da će izmjeriti tj. metar je desetmiliionska četvrtina Zemlje
- * Mjerenje je trajalo od 1791. godine do 1799. godine



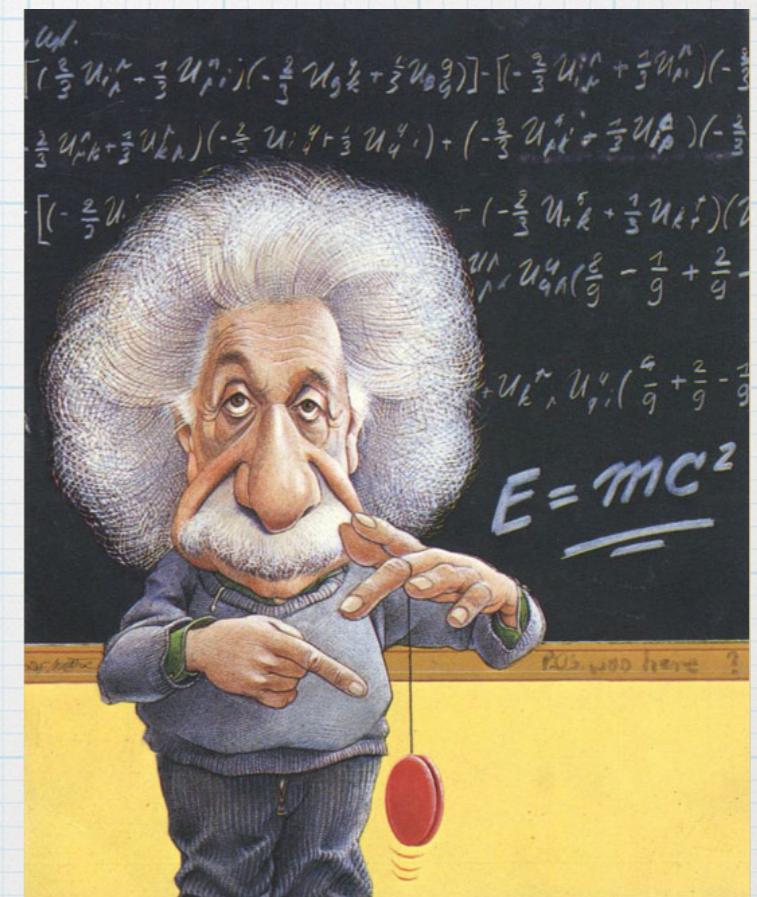
$$\begin{aligned}
& \frac{2m}{\Delta t} \frac{dx^2}{dt^2} + \Psi = E\Psi \quad \Psi e^{-\frac{iE\Delta t}{\hbar}} \quad k = \frac{2\pi}{4\pi \epsilon_0 \epsilon_r} \frac{\lambda}{R_z} \quad F_m = \vec{B} \cdot \vec{l} = \frac{\mu_0 I_1 I_2}{2\pi d} l \\
& U_{ef} = \frac{U_m}{\sqrt{2}} \quad E = \hbar \omega \quad \Delta t = \frac{\Delta t'}{\sqrt{1 - \frac{v^2}{c^2}}} \quad X_L = \frac{U_m}{I_m} = \omega L = 2\pi f L \quad F_g = \frac{m_1 m_2}{r^2} g \\
& \vec{B} = \mu_0 \frac{NI}{\ell} \sqrt{2} \quad v = \frac{nh}{2\pi r m_e} \quad U = \frac{W_{AB}}{Q} = \frac{|E_{PA} - E_{PB}|}{Q_E} = |\varphi_A - \varphi_B| \quad T = \frac{4n_1 n_2}{(n_2 + n_1)^2} \quad R_m = \frac{C}{T^2} k = \pm \sqrt{\frac{2m}{\hbar^2} (E - V_0)} \\
& K = \rho^2 \frac{\ell}{2m} \quad m_0 = \frac{M_m}{N_A} = \frac{M_r \cdot 10^{-3}}{N_A} \quad m = N \cdot m_0 = \frac{Q}{Ne} \frac{M_m}{N_A} \quad E = \frac{E_c}{q} \int_{-a/L}^{+a/L} \sin(\omega t + \phi) dy \\
& \lambda = \frac{h}{\sqrt{2eU m_e}} \quad R = \rho \frac{\ell}{S} \quad I = \frac{U_e}{R + R_i} \quad 2 \quad \frac{\sin \alpha}{\sin \beta} = \frac{V_1}{V_2} = \frac{w_2}{w_1} \quad V = \frac{1}{\sqrt{\epsilon_r \mu_r}} = \frac{C}{\sqrt{E_r \mu_r}} \\
& f_0 = \frac{1}{2\pi} \sqrt{\frac{g}{\epsilon}} \quad \Psi_{Ax} = \sqrt{2/L} \sin \frac{n\pi x}{L} \quad E = m c^2 \quad \phi_e = \frac{\Delta E}{\Delta t} \frac{w_1}{x} + \frac{w_2}{x'} = \frac{w_2 - w_1}{r} \\
& \oint \vec{B} d\vec{l} = \mu_0 \iint \vec{J} d\vec{S} \quad \vec{S} = \frac{1}{\mu_0} (\vec{E} \times \vec{B}) \quad \Delta I_B \quad \phi = \frac{2\pi \sin 2^\circ}{\lambda} \frac{F_x}{h^2} = \frac{1}{2} C_x P S \vec{v}^2 \\
& C(s) \quad V_k = \sqrt{\frac{3kT}{m_0}} = \sqrt{\frac{3kTN_A}{M_m}} = \sqrt{\frac{3R_m T}{M_r \cdot 10^{-3}}} \quad E = \frac{1}{2} \hbar \sqrt{k/m} \quad \beta = \frac{\Delta I_C}{\Delta I_B} \quad \oint \vec{D} d\vec{S} = Q^* \\
& \gamma = \frac{\ln 2}{T} \quad F_h = Sh \rho g \quad f_0 = \frac{1}{2\pi \sqrt{\rho_l}} \quad M = \vec{F}_d \cos \alpha \quad R = \frac{U}{I} \quad F_V = \oint \frac{F_n}{R} \\
& \left(\frac{E_t}{E} \right) = \frac{T}{2 \cos \theta_1 \cos \theta_2} \quad M_0 = \frac{4\pi^2 r^3}{\partial \rho T^2} \quad \sigma = \frac{Q}{S_T} \quad \vec{M} = \vec{F}_d \cos \alpha \quad \vec{F}_n = \frac{F_n}{R} \quad \star
\end{aligned}$$

Zanimljivosti o

fizičarima

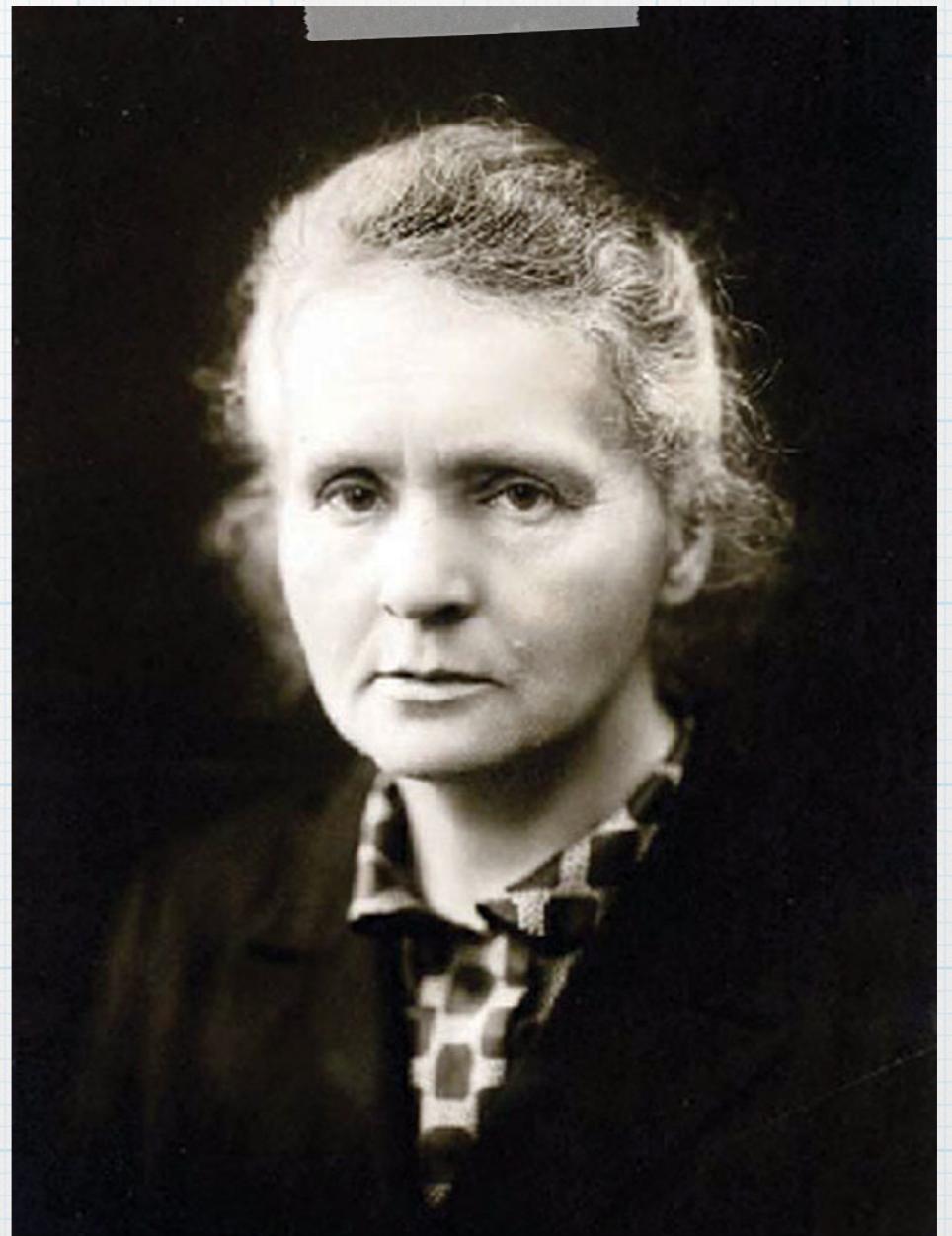
Zanimljivosti o Albertu Einsteinu

- * Albert Einstein nije govorio do svoje treće godine te je doktor rekao njegovoj majci da ima potreškoća i da nikad neće moći biti kao njegovi vršnjaci
- * Ali on je zapamćen kao jedan od najpametnijih ljudi na svijetu



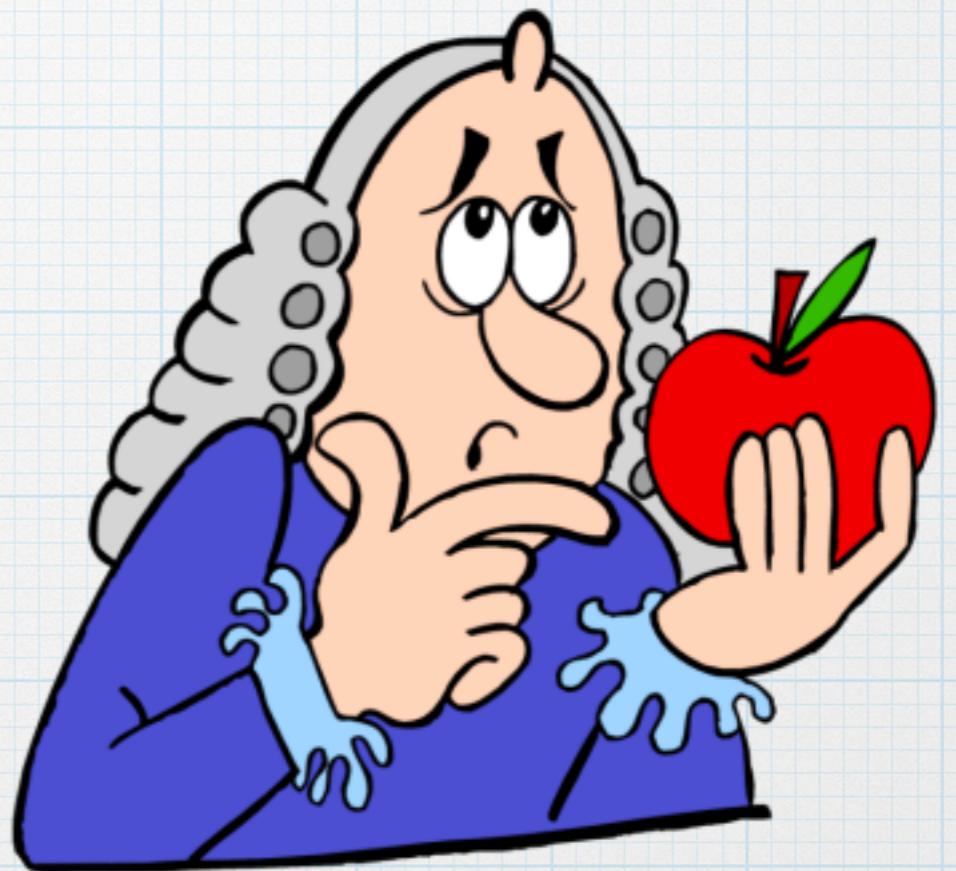
Marie Curie

- * Marie Curie je otkrila radijaciju i umrla je od nje
- * Za svoj rad dobila je 2 Nobelove nagrade



Isaac Newton

- * Isaac Newton je počeo istraživati gravitaciju zašto jer dok se odmarao u hladu ispod stabla, jabuka mu je pala na glavu



$$\begin{aligned}
E_k &= \frac{1}{2} m v^2 \quad t g \varphi_B = \frac{m_2}{m_1} = n_{21} \quad P V = n R T \quad \vec{\psi} = \iint \vec{B} d\vec{S} = A D \quad H_\lambda = \frac{\Delta M_e}{\Delta \lambda} \\
-\frac{\hbar^2}{2m} \frac{d^2 \psi}{dx^2} + V \psi &= E \psi \quad \oint e = \frac{L}{\Delta t = \frac{\Delta t'}{\sqrt{1 - \frac{v^2}{c^2}}}} \int \frac{\Delta \phi}{2\pi} = \frac{\Delta x}{\lambda} = \frac{x_2 - x_1}{S_2} \quad V = C/\lambda \quad \Phi = NBS \\
U_{ef} &= U_m \quad E = \hbar \omega \quad \phi_e = \frac{L}{\sqrt{1 - \frac{v^2}{c^2}} 4\pi r^2} \quad X_L = \frac{U_m}{I_m} = \frac{\omega L}{2\pi f L} \quad F_m = \vec{B} I \ell = \frac{\mu_0 I_1 I_2}{2\pi d} \ell \\
B &= \mu_0 \frac{NI}{\ell} \sqrt{2} \quad v = \frac{nh}{2\pi r m_e} \quad \rho_E = \frac{F_E}{\rho_0} = k \frac{\rho}{r^2} \quad \Phi = |E_{PA} - E_{PB}| = |\varphi_A - \varphi_B| / T = \frac{4n_1 n_2}{(n_2 + n_1)^2} \quad R_m = \frac{C}{f^2} \quad \delta \\
k = p^2/2m \quad m_o &= \frac{M_m}{N_A} = \frac{M_R \cdot 10^{-3}}{N_A} \quad m = N \cdot m_o = \frac{\rho}{N_A} \frac{M_m}{M_R} \quad E = \frac{E_c}{a} \int_{-a/2}^{+a/2} \sin(\omega t + \phi) dy \quad k = \pm \sqrt{\frac{2m}{\hbar^2}} (E - V_0) \\
\lambda &= \frac{\hbar}{\sqrt{2eUm_e}} \quad R = \rho \frac{\ell}{S} \quad E = mc^2 \quad \frac{\sin \alpha}{\sin \beta} = \frac{V_1}{V_2} = \frac{n_2}{n_1} \quad V = \frac{1}{\sqrt{\epsilon_r \mu_r}} = \frac{C}{\sqrt{E_r \mu_r}} \\
f_0 = \frac{1}{2\pi} \sqrt{\frac{g}{e}} \quad \gamma_{ex} &= \sqrt{2/L} \sin \frac{n\pi x}{L} \quad \beta = \frac{\Delta I_c}{E} \quad \phi_e = \frac{\Delta \phi}{\Delta t} = \frac{n_1}{x} + \frac{n_2}{x'} = \frac{n_2 - n_1}{x} \\
\oint \vec{B} d\vec{l} &= \mu_0 \iint \vec{J} d\vec{S} \quad \vec{S} = \frac{1}{\mu_0} (\vec{E} \times \vec{B}) \quad \frac{\Delta I_B}{E} = \frac{1}{\lambda} \frac{\sin \lambda}{\lambda} \quad \iint \vec{D} d\vec{S} = Q^* \\
V_L &= \sqrt{\frac{3kT}{m_o}} = \sqrt{\frac{3kTN_A}{M_m}} = \sqrt{\frac{3R_m T}{M_R \cdot 10^{-3}}} \quad E = \frac{\hbar k}{2} \sqrt{k/m} \quad \vec{F}_x = \frac{1}{2} C_x \rho \beta \vec{v}^2 \\
\gamma &= \frac{\ln 2}{T} \quad F_h = S h \rho g \quad f_0 = \frac{1}{2\pi \sqrt{CL}} \quad \sigma = \frac{Q}{r} \quad M = \vec{F} d \cos \alpha \quad \vec{F}_v = \oint \frac{F_h}{R} \\
\left(\frac{E_t}{E_0} \right)_{||} &= \frac{2 \cos \vartheta_1 \cos \vartheta_2}{\cos(\vartheta_1 - \vartheta_2) \sin(\vartheta_1 + \vartheta_2)} \quad S_{Im}^2 = U_m^2 \left[\frac{1}{R^2} + \left(\frac{1}{x_c} - \frac{1}{x_L} \right)^2 \right] \lambda^* T = b \\
E_y &= E_0 \sin(\kappa_x - \omega t) \quad R = R_0 \sqrt[3]{A} \quad \int \vec{E} d\vec{l} = - \int \frac{\partial \vec{B}}{\partial t} \cdot d\vec{S} \quad \rho = \frac{E}{C} = \frac{h f}{C} = \frac{h}{\lambda} \\
S &= \frac{1}{A} \frac{\partial l \omega}{\lambda} \quad \vec{E} \rightarrow \vec{B} \rightarrow \vec{D} \rightarrow \vec{P} \rightarrow \vec{F} \quad \mu = U_m \sin \omega(t - T) = U_m \sin 2\pi \left(\frac{t}{T} - \frac{x}{\lambda} \right)
\end{aligned}$$

* Nadam se da će vam od sada biti lakše učiti fiziku