KAUNO TECHNOLOGIJOS UNIVERSITETAS
FIZIKOS KATEDRA

FIZIKA 2

EGZAMINAS

FAKULTETAS.....

GRUPĖ.....

STUDENTAS.....
(pavardė, vardas)

ŠIFRAS.....

$\lambda = \frac{c}{\nu}$; $\hbar = \frac{h}{2\pi}$; $E = h\nu$;

$\lambda = \frac{h}{p} = \frac{h}{mv} = \frac{h}{\sqrt{2mE_K}} = \frac{h}{\sqrt{2meU}}$; $\Delta x \Delta p_x \geq h$;

$\Delta W \tau \geq h$; $-\frac{\hbar^2}{2m}\Delta\Psi(\vec{r},t) + V\Psi(\vec{r},t) = i\hbar\frac{\partial\Psi(\vec{r},t)}{\partial t}$;

$\frac{\partial^2\psi}{\partial x^2} + \frac{2m}{\hbar^2}(W-V)\psi = 0$; $W_n = \frac{h^2 n^2}{8ml^2}$;

$D \approx e^{-(2/\hbar)\sqrt{2m(V_0-W)}l}$; $\nu = R\left(\frac{1}{n^2} - \frac{1}{m^2}\right)$;

$R = \frac{m_e e^4}{8\varepsilon_0^2 h^3} = 3{,}29\cdot 10^{15}\ \mathrm{s}^{-1}$; $L = \hbar\sqrt{l(l+1)}$;

$L_z = m\hbar$; $\psi_{nlm}(r,\vartheta,\varphi) = R_{nl}(r)Y_{lm}(\vartheta,\varphi)$;

$W_n = -\frac{m_e Z^2 e^4}{32\pi^2\varepsilon_0^2\hbar^2 n^2} = -\frac{RhZ^2}{n^2}$; $\psi_{100} = Ce^{-\frac{r}{a}}$;

$F = -p_m\frac{\partial B}{\partial z}$; $p_{msz} = \pm\frac{e\hbar}{2m_e} = \pm\mu_B$; $L_s = \hbar\sqrt{s(s+1)}$;

$L_{sz} = m_s\hbar$; $E = eU = h\nu = \frac{mv^2}{2}$; $\lambda_0 = \frac{hc}{eU}$;

$\nu = R(Z-\sigma)^2\left(\frac{1}{n^2} - \frac{1}{m^2}\right)$; $\sqrt{\nu} = a(Z-\sigma)$;

$W = W_s + W_e + W_v + W_r + W_b$; $W* = W_e + W_v + W_r$;

$W_r = \frac{L^2}{2I_z}$; $L = \hbar\sqrt{J(J+1)}, J = 0,1,2,...,$

$W_{r,J} = \frac{\hbar^2 J(J+1)}{2I_z} = BJ(J+1)$;

$W_v = \left(\mathrm{v} + \frac{1}{2}\right)h\nu_0, \mathrm{v} = 0,1,2,...$

$\nu = \frac{\Delta W^*}{h} = \frac{\Delta W_e}{h} + \frac{\Delta W_\mathrm{v}}{h} + \frac{\Delta W_\mathrm{r}}{h}$;

$\frac{N_i}{N_j} = e^{-\frac{(W_i - W_j)}{kT}} = e^{-\frac{h\nu}{kT}}$ $\vec{j} = en_o(u_n + u_p)\vec{E} = \gamma\vec{E}$;

$\gamma = \gamma_0 e^{-\Delta W_g/(2kT)}$; $R_b \cong R_0 A^{1/3}$; $\mu_b = \frac{e\hbar}{2m_p}$;

$\Delta m = Zm_p + (A-Z)m_n - m_{br}$;

$\Delta m = Zm_{{}_1^1H} + (A-Z)m_n - m_{izotopo}$;

$W = \Delta mc^2, W(\mathrm{MeV}) \to 931{,}5\cdot m(\mathrm{a.m.v.})$; $\delta W = \frac{W}{A}$;

$N = N_0 e^{-\lambda t}$; $\tau = \frac{1}{\lambda}$; $T = \frac{\ln 2}{\lambda} \cong \frac{0{,}693}{\lambda}$;

${}_Z^A X \to {}_{Z-2}^{A-4}Y + {}_2^4He$; ${}_{88}^{226}Ra \to {}_{86}^{222}Rn + {}_2^4He$;

${}_0^1n \to {}_1^1p + {}_{-1}^0e^- + \widetilde{\nu}_e$; ${}_Z^A X \to {}_{Z+1}^A Y + {}_{-1}^0e^- + \widetilde{\nu}_e$;

${}_{90}^{234}Th \to {}_{91}^{234}Pa + {}_{-1}^0e^-$; ${}_1^1p \to {}_0^1n + {}_1^0e^+ + \nu_e$;

${}_Z^A X \to {}_{Z-1}^A Y + {}_{+1}^0e^+ + \nu_e$; ${}_1^1p + {}_{-1}^0e^- \to {}_0^1n + \nu_e$;

${}_Z^A X + {}_{-1}^0e \to {}_{Z-1}^A Y + \nu_e$; $X + a \to Y + b$;

${}_4^9Be + {}_2^4He \to {}_6^{12}C + {}_0^1n$; $X + a \to C \to Y + b$;

${}_7^{14}N + {}_2^4He \to {}_9^{18}F \to {}_8^{17}O + {}_1^1p$;

$W = c^2\left(\sum_i m_i^{prieš} - \sum_j m_j^{po}\right)$;

$U + {}_0^1n \to X + Y + k\,{}_0^1n + W$; $K = \frac{N_n}{N_{n-1}}$;

${}_1^2H + {}_1^3H \to {}_2^4He + {}_0^1n + 17{,}6MeV$;

${}_{-1}^0e + {}_{+1}^0e \to 2\gamma$;

Šviesos greitis vakuume $c = 3\cdot 10^8$ m/s;
Planko konstanta $h = 6{,}62\cdot 10^{-34}$ J·s;
Redukuota Planko konstanta $\hbar = h/(2\pi) = 1{,}05\cdot 10^{-34}$ J·s;
Rydbergo konstanta $R = 3{,}29\cdot 10^{15}\ \mathrm{s}^{-1}$;
Elementarusis krūvis $e = 1{,}60\cdot 10^{-19}$ C;
Elektrono masė $m_\mathrm{e} = 9{,}11\cdot 10^{-31}$ kg $= 5{,}49\cdot 10^{-4}$ amv;
Protono masė $m_p = 1{,}67\cdot 10^{-27}$ kg $= 1{,}007276$ amv;
Neutrono masė $m_\mathrm{n} = 1{,}008665$ amv;
Izotopų masės:
${}_1^1H = 1{,}007825$ amv; ${}_1^2H = 2{,}014102$ amv;
${}_3^7Li = 7{,}016005$ amv; ${}_4^8Be = 8{,}005308$ amv;
${}_5^{10}B = 10{,}012939$ amv; ${}_7^{14}N = 14{,}003242$ amv;
1amv = $1{,}6605\cdot 10^{-27}$ kg→931,5 MeV;