

Ex 6020

exam 2015

See solution of Ex 3040

$$(1) \quad X_{eq} = \frac{1}{\int(\frac{5}{2})} \frac{N_a}{A} \left(\frac{2\pi}{m_b T} \right)^{3/2}$$

$$(2) \quad \omega = \int(\frac{5}{2}) \frac{A}{\sqrt{N_a M'}} \left(\frac{m_b}{2\pi} \right)^{3/2} T^2$$

$$(3) \quad N(v) = N_a \left(\frac{m_a}{2\pi T} \right)^{3/2} 4\pi v^2 e^{-\frac{1}{2} m_a v^2 / T} \quad \text{בולטמן}$$

$$N(v) = A \cdot (L-x) \cdot \left(\frac{m_b}{2\pi} \right)^3 4\pi v^2 \frac{1}{e^{\frac{1}{2} m_b v^2 / T} - 1} \quad \text{קונסטנט}$$

$$(4) \quad I = \frac{\delta A}{4A \cdot L_{eff}} \int_0^{\infty} N(v) \cdot v dv \quad L_{eff} = x, (L-x)$$

$$= \delta A \int(\frac{5}{2}) \cdot \left(\frac{T}{2\pi} \right)^2 \sqrt{\frac{m_b^3}{m_a}} \int_0^{\infty} x e^{-x} dx \quad \text{בולטמן}$$

$$= \delta A \cdot \left(\frac{T}{2\pi} \right)^2 m_b \int_0^{\infty} \frac{x dx}{e^x - 1} \quad \text{קונסטנט}$$

$$(5) \quad \dot{X}_{eq} = \frac{1}{\int(\frac{5}{2})} \left(\frac{2\pi}{m_b T} \right)^{3/2} \frac{I}{A}$$

המהירות של
בולטמן I
($\dot{N}_a = I$)