

THE NEUTRON

$$m = 1.67482 \times 10^{-24} \text{ gm} \quad \mu = 6.0311 \times 10^{-12} \text{ eV/gauss}$$

$$E = \frac{\hbar^2 k^2}{2m} = \frac{h^2}{2m\lambda^2} = hf = \frac{1}{2}mv^2 = \frac{1}{2}m \left(\frac{d}{t}\right)^2 = k_B T$$

$$\begin{aligned} E[\text{meV}] &= 2.0723 k^2 = \frac{81.81}{\lambda^2} = 4.136 f = 5.2267 \times 10^{-6} v^2 \\ &= 5.2267 \times 10^6 \frac{1}{(t/d)^2} = 0.086173 T \end{aligned}$$

$$v = 3956/\lambda$$

$$\lambda[\text{\AA}], f[\text{THz}], v[\text{m/s}], k[\text{\AA}^{-1}], \frac{t}{d} \left[\frac{\mu\text{s}}{\text{m}} \right], T[\text{K}]$$