0. What do I “see” if I “look” at a star? Surface! What is the surface? What you see

1. Temperature ← Planck spectrum

2. \( E = hf = h \frac{c}{\lambda} \)

3. Strength of a given spectral line:
   
   \[ \frac{1}{e^{E/kT}} \rightarrow \text{Temperature} \]
   
   \[ \rightarrow F_{\text{surface}} = 0.7^4 + \text{Porb} \rightarrow \text{Size!} \]

Classical: \( x(t) \)

Q.M.: \( \psi(x,t) \) Wave function

\( \in \mathbb{C} \) (State vector)

\( \rightarrow \text{Prob} (x...x+\Delta x) = |\psi(x,t)|^2 \Delta x \)

“Standing” wave functions

Stationary States

Hamiltonian Operator represents energy

\( H \psi = -\frac{\hbar^2}{2m} \frac{\partial^2}{\partial x^2} \psi + V(x) \psi \)

Stationary states: \( H \psi = E \psi \) (eigenfunctions of \( H \) operator)

[\( E \) is the eigenvalue, \( -\frac{\hbar^2}{2m} \) is the kinetic energy, \( V(x) \) is the potential energy, \( -\frac{\hbar^2}{2m} \frac{\partial^2}{\partial x^2} \) is the kinetic energy, and \( E \) is the binding energy.]