5. Temperature & Radiation

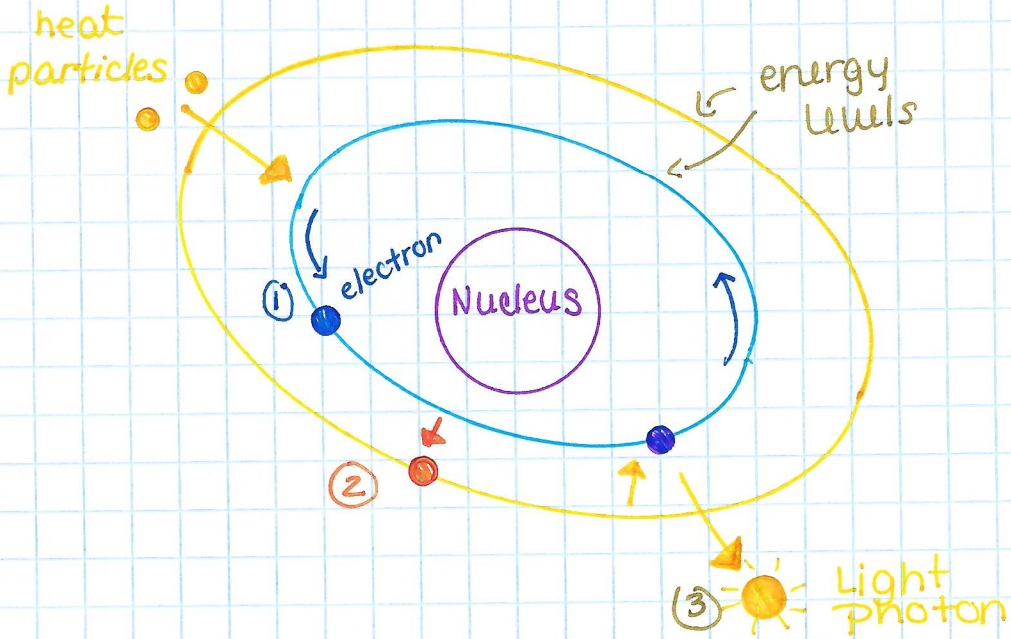
A. when an object heats up, it radiates light more strongly at shorter wavelengths
which means

when an object heats, the light it gives off changes from red (long λ) to yellow to blue (short λ)

B. The sun radiates light w/ a maximum λ in the blue-green range but the sun looks yellow-white to us.
(1) The human eye interprets star light as whitish with hints of color.
Cool stars - white tinged w/ red
Very Hot stars - white tinged w/ blue

6. The color of a star is dependent on the most abundant element in the star

A. How Atoms Emit Light



(1) Increased temperature/heat particles collide w/ electrons spinning around the nucleus of the atom.
(2) This cause the electron to absorb that energy & jump to a higher energy level, called getting excited
(3) The electron falls back to its original energy level, releasing the extra energy as a light photon.

7. Forming a Spectrum

A. spectrum - key to determining the composition & conditions of an astronomical body like a star

B. Types of spectra used by astronomers

1. continuous spectrum - all the colors of light

The atoms in the source of the light are so tightly packed together, it is hard to distinguish one atom's colors from another
- usually solids or dense gases (star interiors)

2. emission line spectrum (bright-line) - only see a few particular wavelengths of colored light
- usually produced by hot gas, aurora, interstellar gas cloud

3. absorption line spectrum (dark-line) - only see a few dark lines in a rainbow
- when light from a hot, dense object passes thru a cooler gas between it and the observer, nearly all stars

8. See page on the Dopple Shift

9. Luminosities of Stars - The Magnitude System