

A background image featuring a glass prism on a dark surface. A beam of light enters from the top right, passes through the prism, and is dispersed into a vertical rainbow spectrum on the right side. The prism and the light path are highlighted with soft glows.

ASTRO 1020 Lab

L2: Atomic Spectra

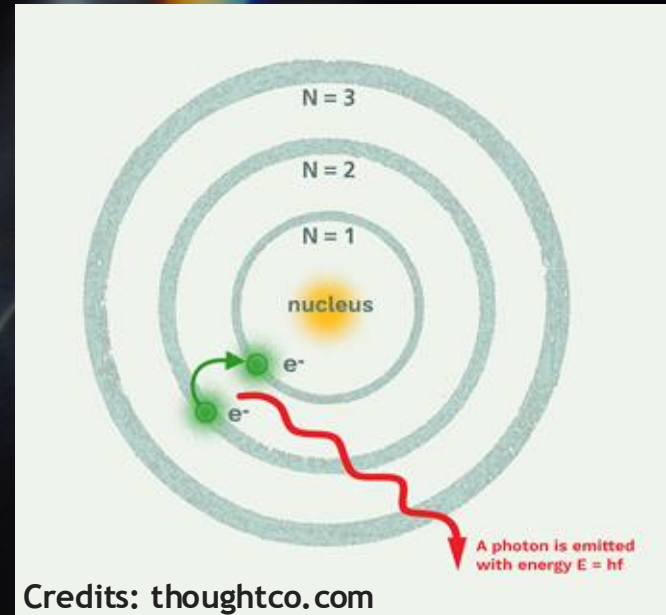
Grading

- All labs are scaled to be graded out of 10 points*

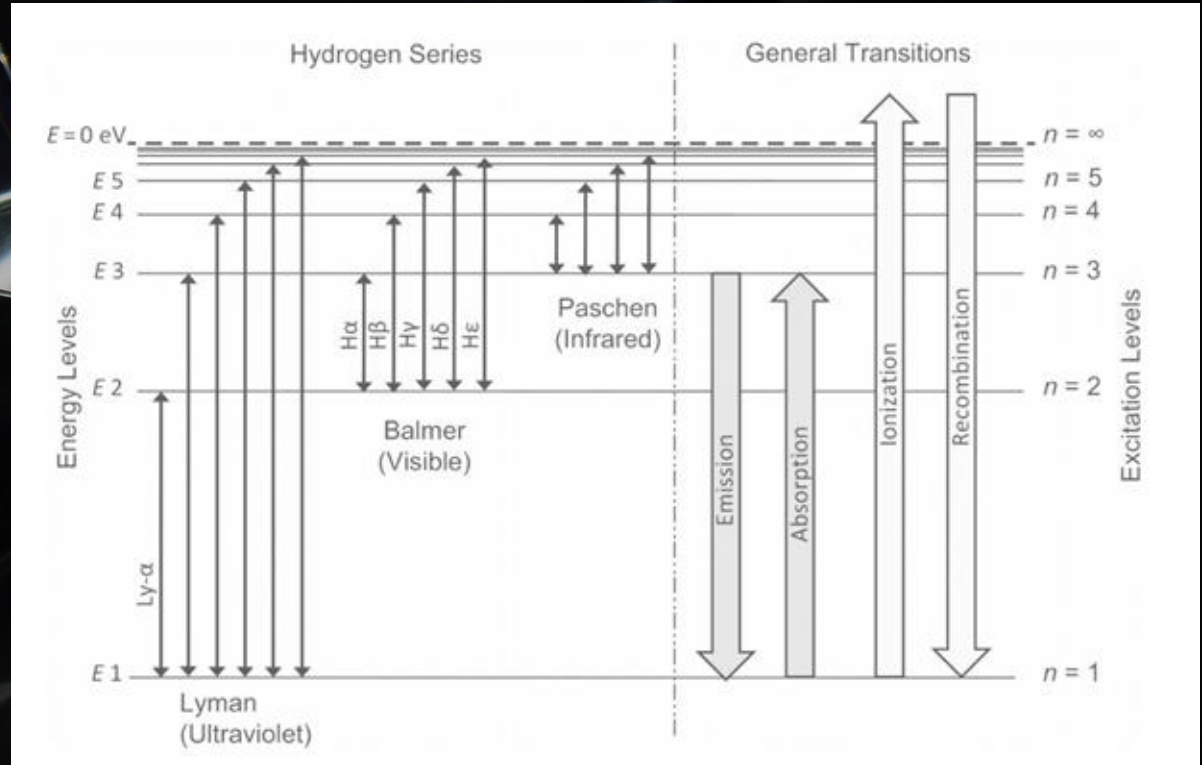
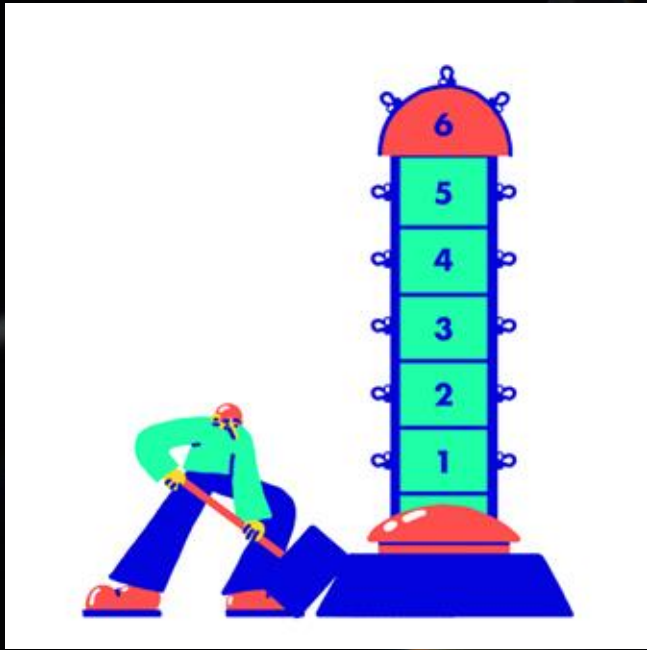
Points per question	Description
1.0	A correct answer with units and work shown. Answers that don't require work will be graded on completion
0.8	A correct answer without units or work shown
0.6	An incorrect answer with units and work shown
0.4	An incorrect answer without units or work shown
0.2	Some work shown without an answer
0.0	Not Attempted

Things you need to know for Lab 2

- Looking through diffraction lenses
- Absorption vs emission spectra
- Electron energy levels
- The Bohr Model



The Hydrogen Atom



The Rydberg Equation

$$\frac{1}{\lambda} = R_H \left(\frac{1}{n_1^2} - \frac{1}{n_2^2} \right)$$

Desmos

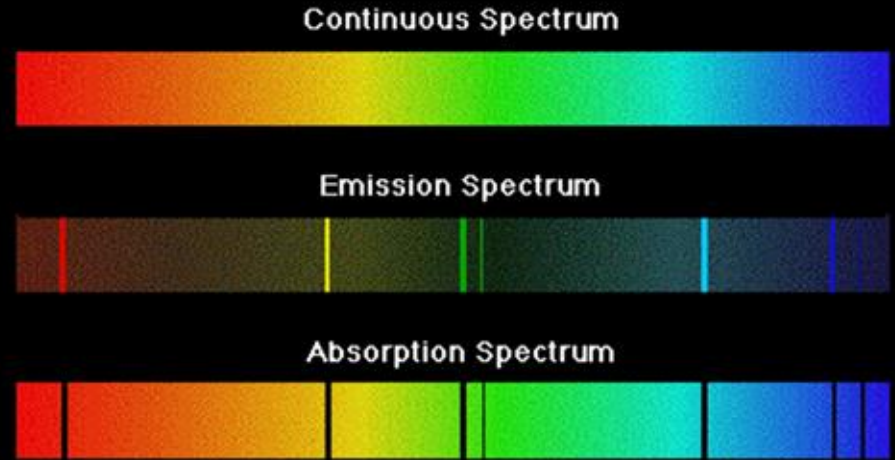
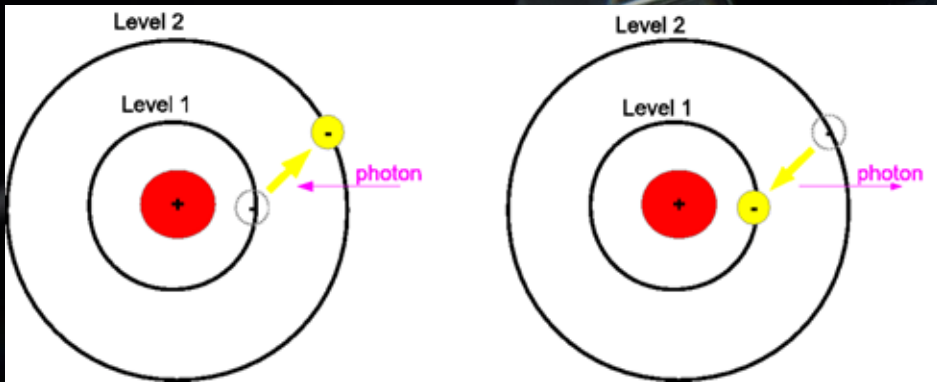
- <https://cutt.ly/RydbergCalculator>



The screenshot shows the Desmos calculator interface with the following content:

- Row 1: Equation $a = R_H \left(\frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$ with a result box showing $a = 2303700$.
- Row 2: Equation $R_H = 1.097 \cdot 10^7$ with a result box showing $R_H = 10970000$.
- Row 3: Variable $n_i = 5$ with a slider ranging from -10 to 10, currently set at 5.
- Row 4: Variable $n_f = 2$ with a slider ranging from -10 to 10, currently set at 2.
- Row 5: Equation $\frac{1}{a} \cdot 10^{10}$ with a result box showing $= 4340.84299171$.

Absorption vs Emission



Credits: thephysicsmill.com

A dark, abstract background featuring a prism on the left that refracts light into a vertical rainbow spectrum on the right. The scene is lit with dramatic, low-key lighting, creating sharp highlights and deep shadows.

Questions?