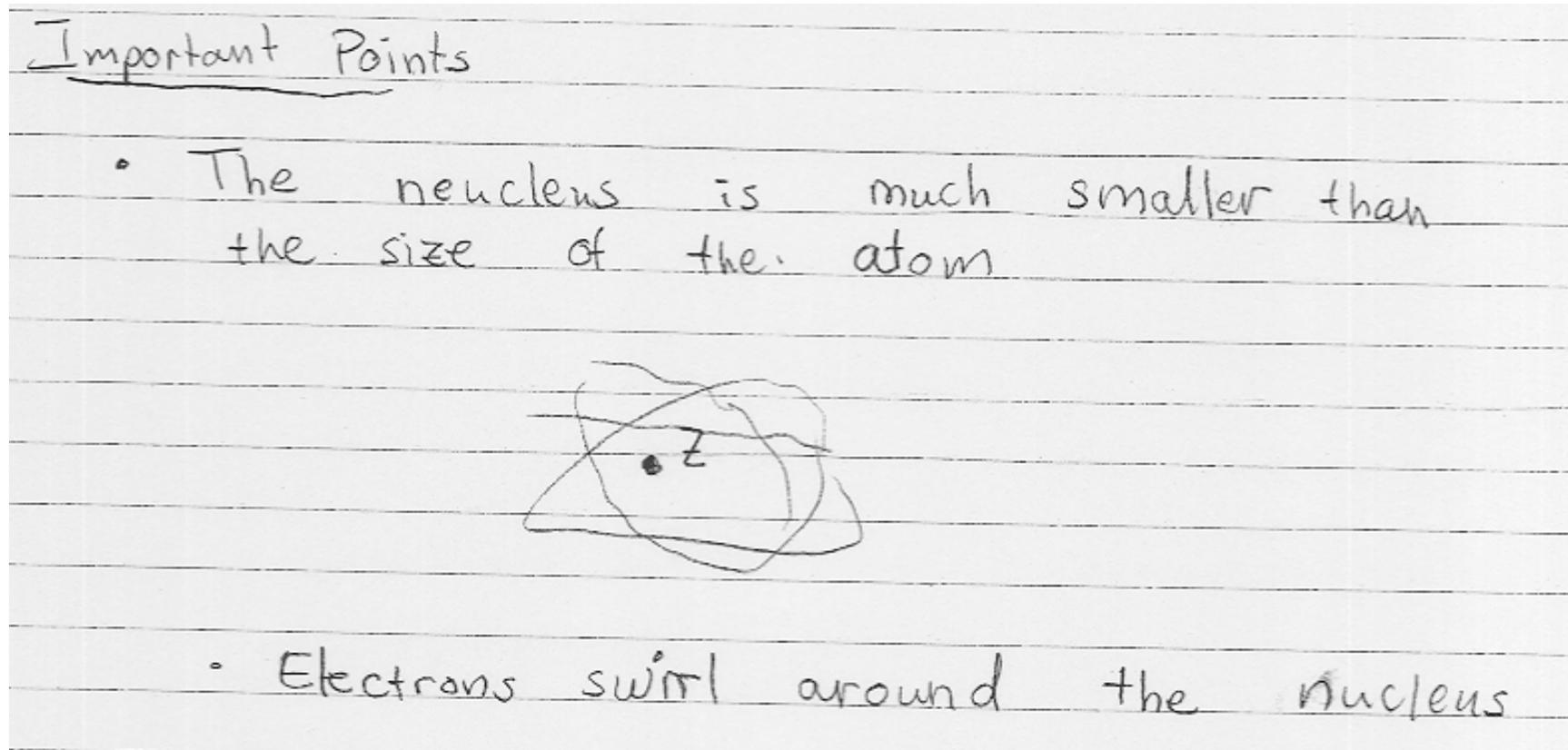


Last Times: the Rutherford picture of an atom



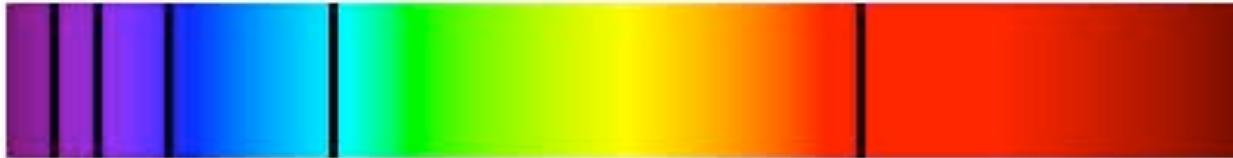
Question for class: What is the size of Nucleus? Atom?

Electron is accelerating (going in a circle)

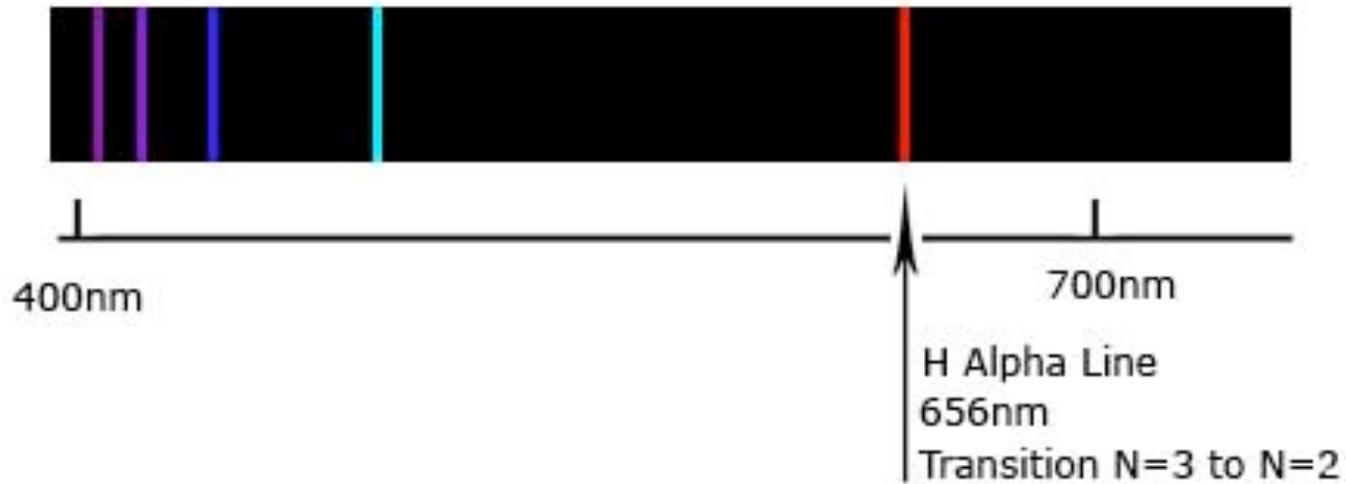
It should emit light! Accelerating charge particles emit light!

Atomic Lines – Atoms emit (and absorb) only certain wavelengths

Hydrogen Absorption Spectrum



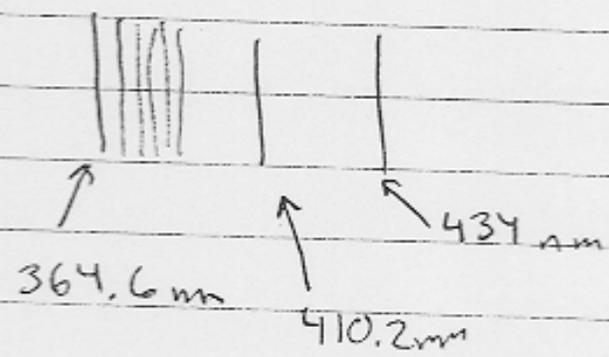
Hydrogen Emission Spectrum



Experimentally the horizontal scale is the diffraction angle

The Balmer formula

Balmer : Lines, Hydrogen



- These wavelengths would be separated in angle by a diffraction grating. And very precisely measured

$$\lambda (\text{nm}) = C_2 \left(\frac{n^2}{n^2 - 2^2} \right) \quad n = 3, 4, 5, 6$$
$$C_2 = 364.6 \text{ nm}$$

↑
Found he could describe certain lines by the mysterious formulas

The goal was to explain this formula