Slides for Radiation Interactions

22.01 – Intro to Radiation

October 28, 2015

The De Broglie Wavelength

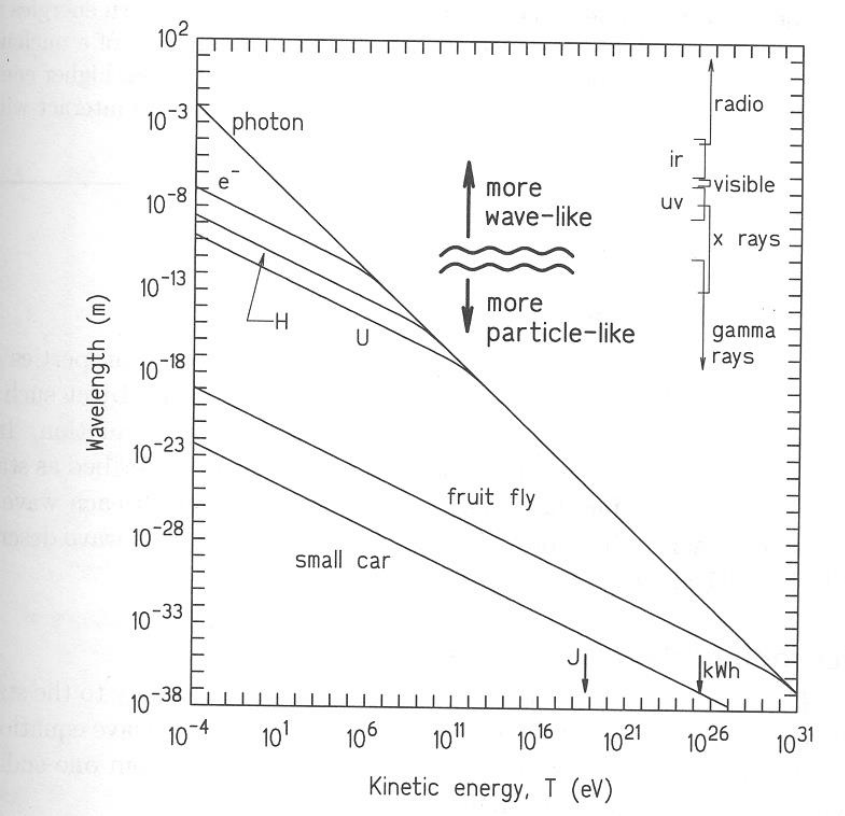
Yip, Sidney. *Nuclear Radiation Interactions*.

$$\lambda = \frac{h}{mv}$$

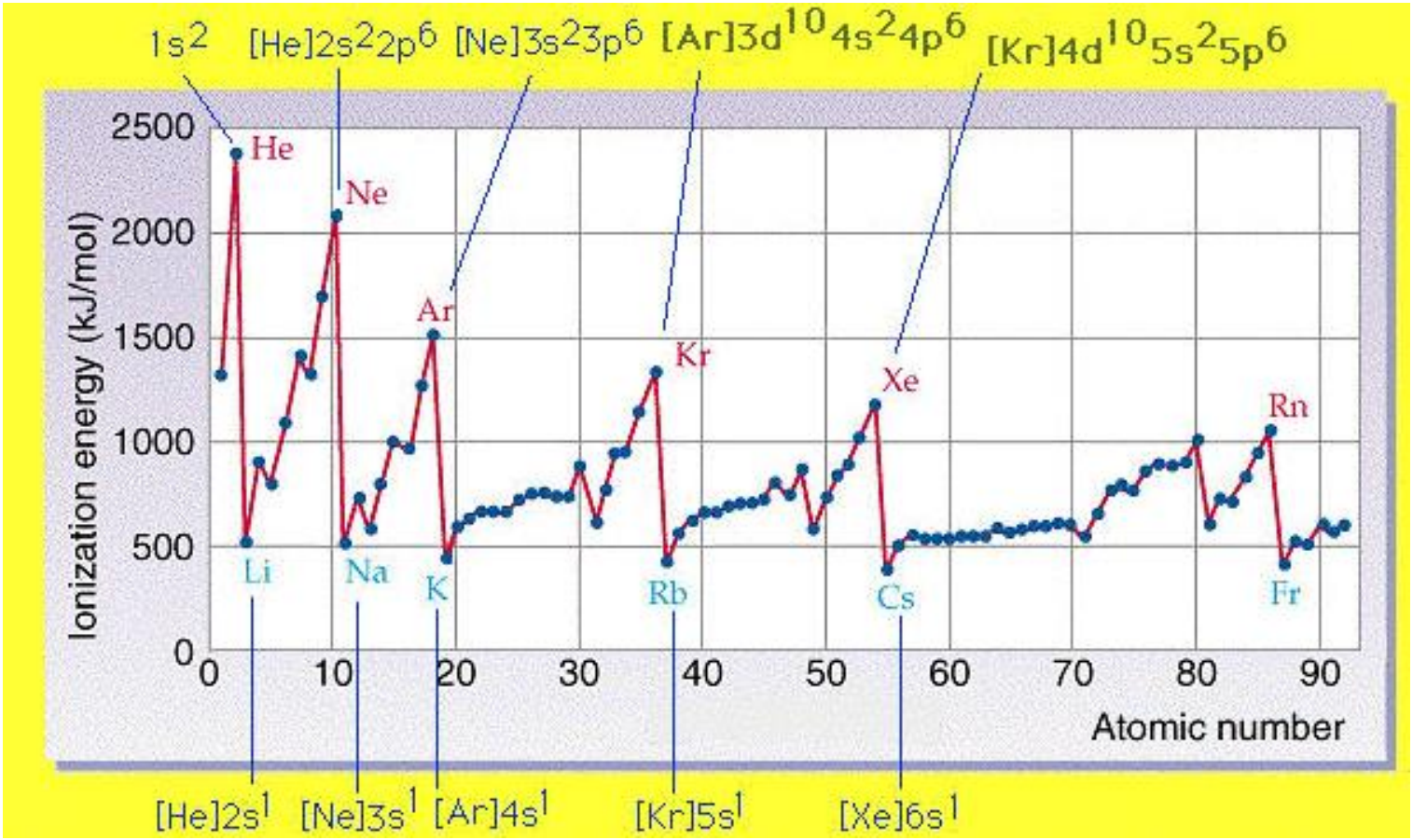
All particles have wave/particle duality!

If an object isn't moving, what is its wavelength?

What does this say about position/velocity uncertainty?



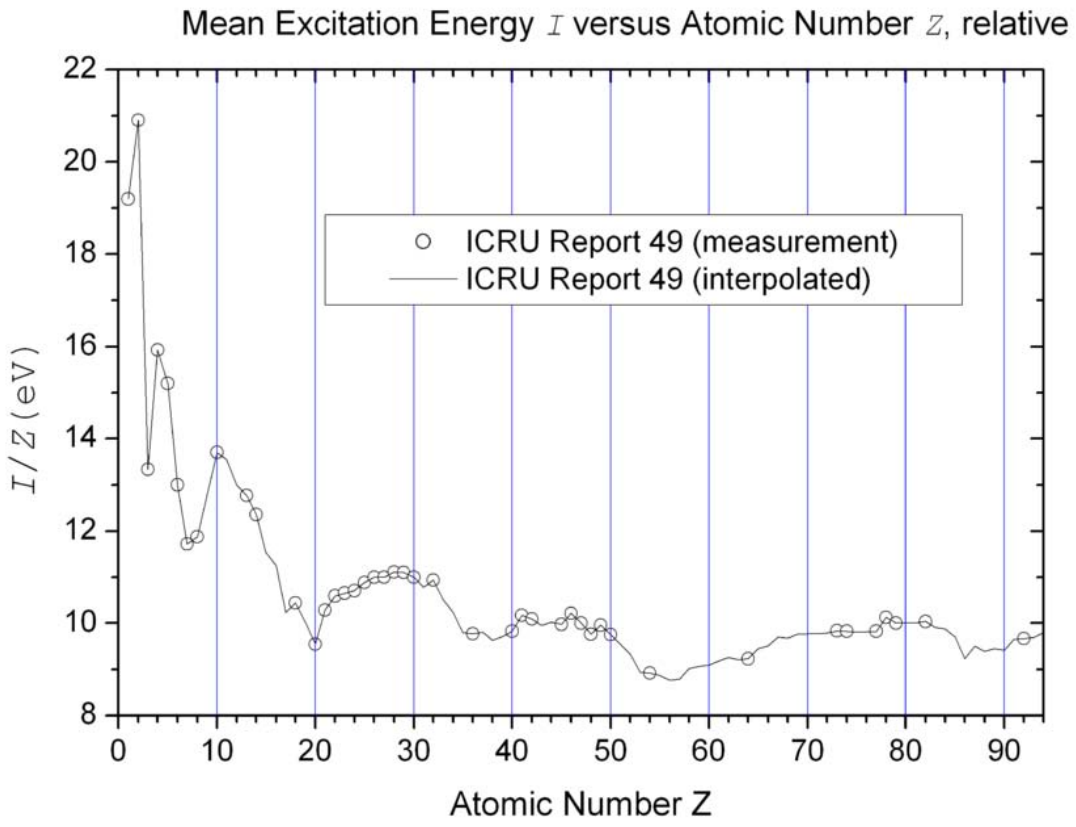
Ionization Energy (NOT $\bar{I}$)



Courtesy of Nelson De Leon. Used with permission.

Mean Ionization Energy ($\bar{I}$)

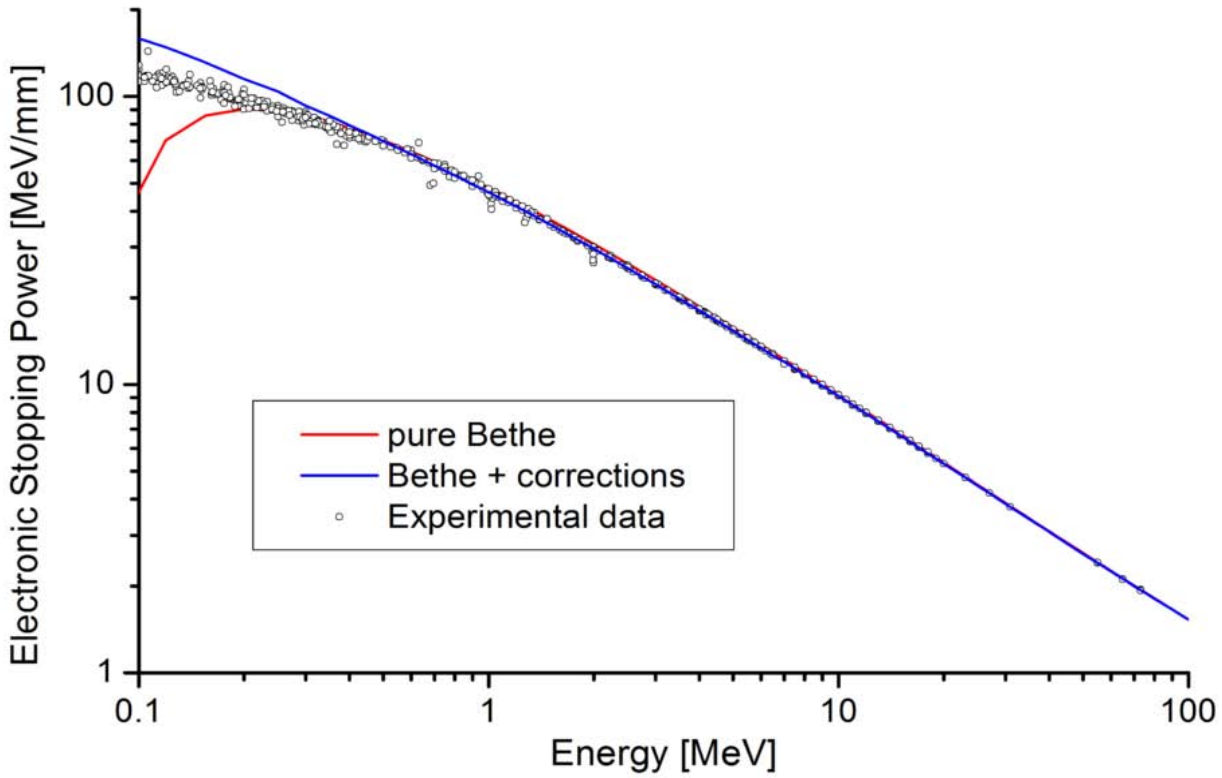
https://commons.wikimedia.org/wiki/File:Mean_Excitation_Potential.png



Public domain image.

Bethe Formula

https://commons.wikimedia.org/wiki/File:StoppingHinAlBethe.png



Bragg Curves, Ranges

Yip, Sidney. ***Nuclear Radiation Interactions*****.**

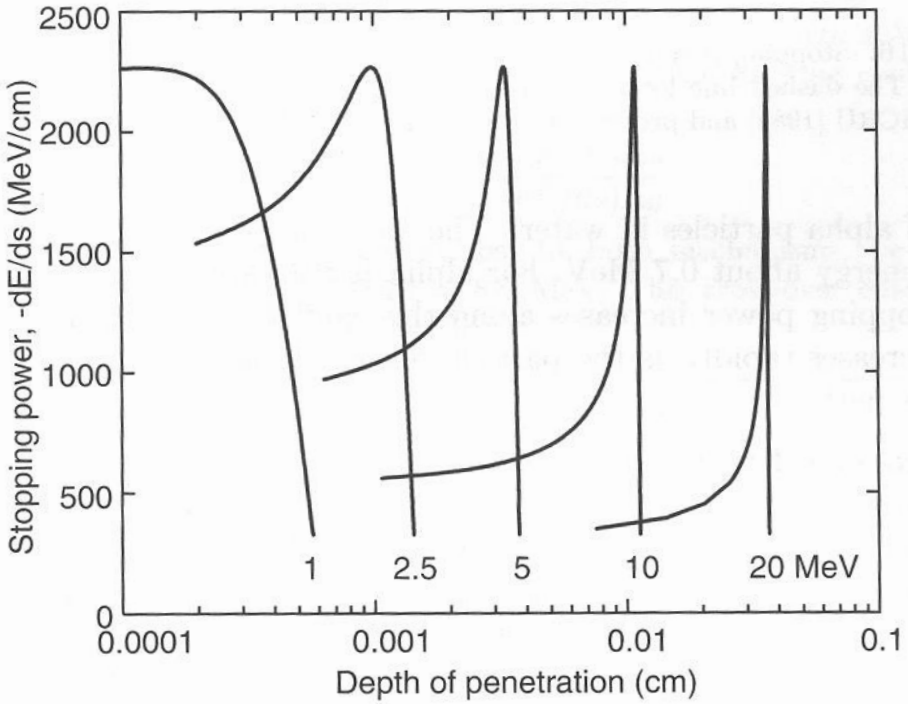


Figure 7.15. "Bragg curves" for alpha particles (helium nuclei) in liquid water: stopping power versus depth of penetration. Data obtained using the ASTAR program [Berger 1992].

22.01 Introduction to Nuclear Engineering and Ionizing Radiation
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