
Slides for Radiation Interactions

22.01 – Intro to Radiation

October 28, 2015

The De Broglie Wavelength

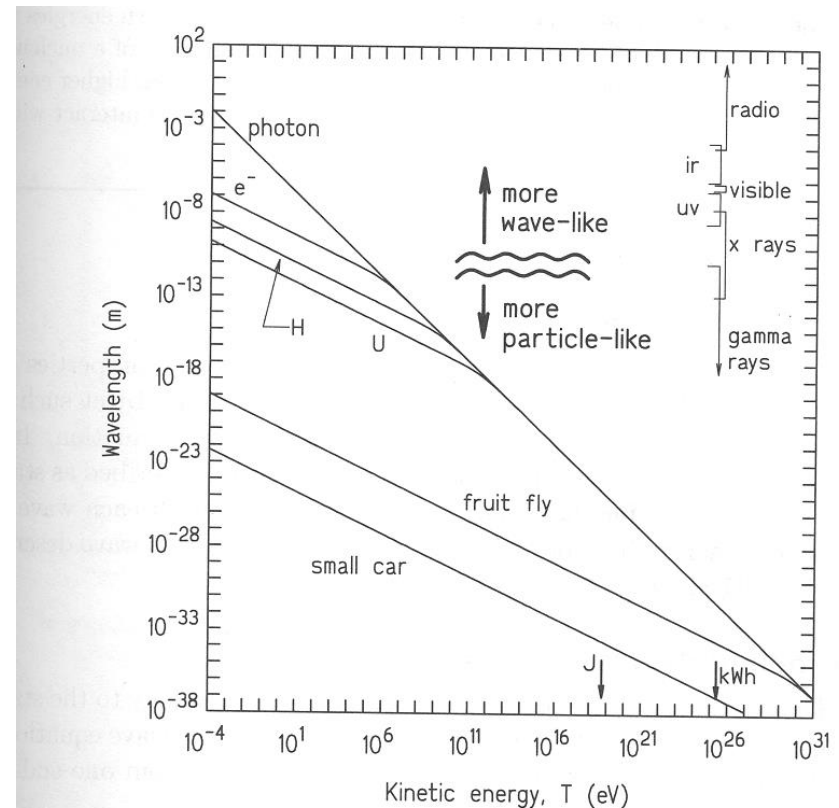
Yip, Sidney. *Nuclear Radiation Interactions*.

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

All particles have wave/particle duality!

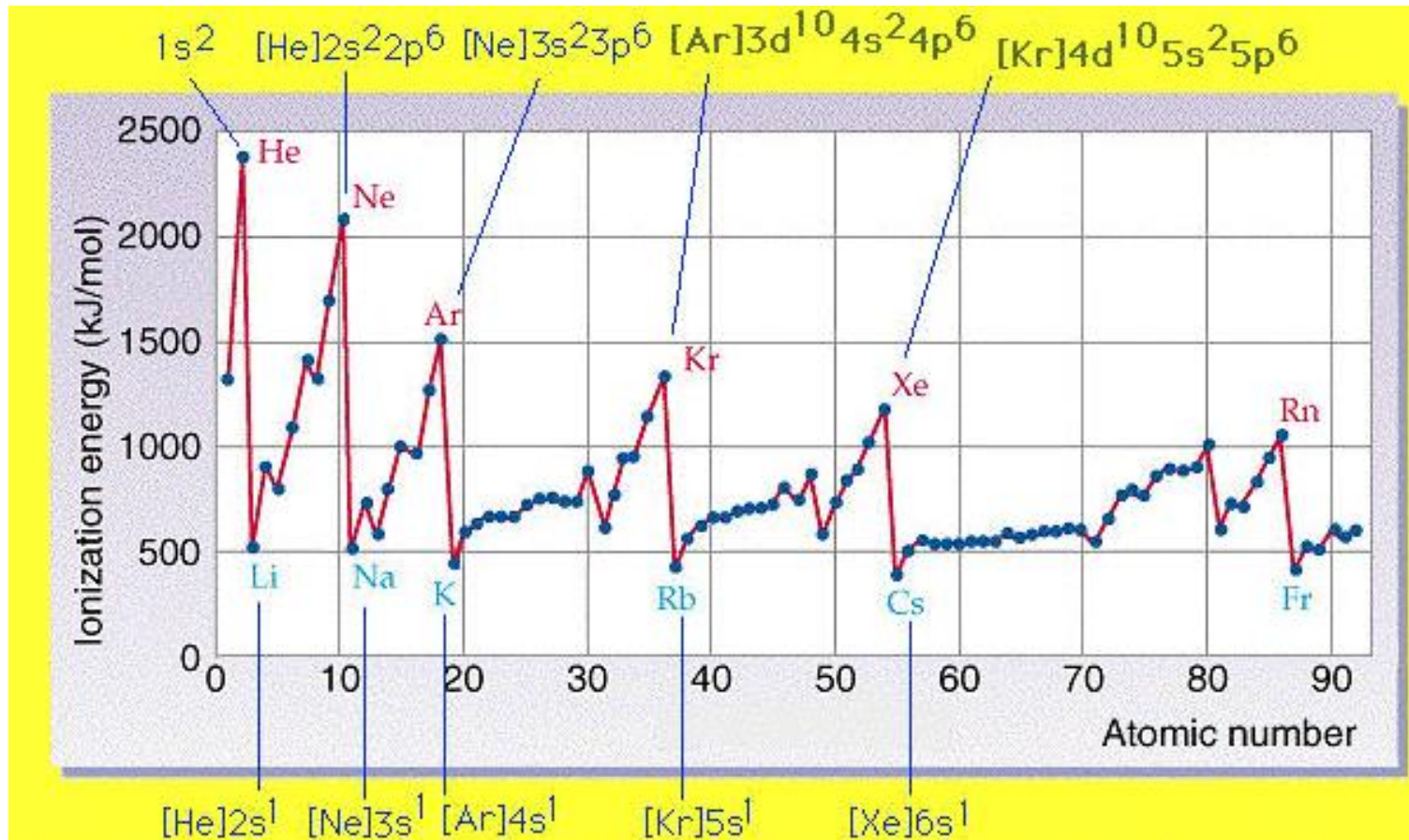
If an object isn't moving, what is its wavelength?

What does this say about position/velocity uncertainty?



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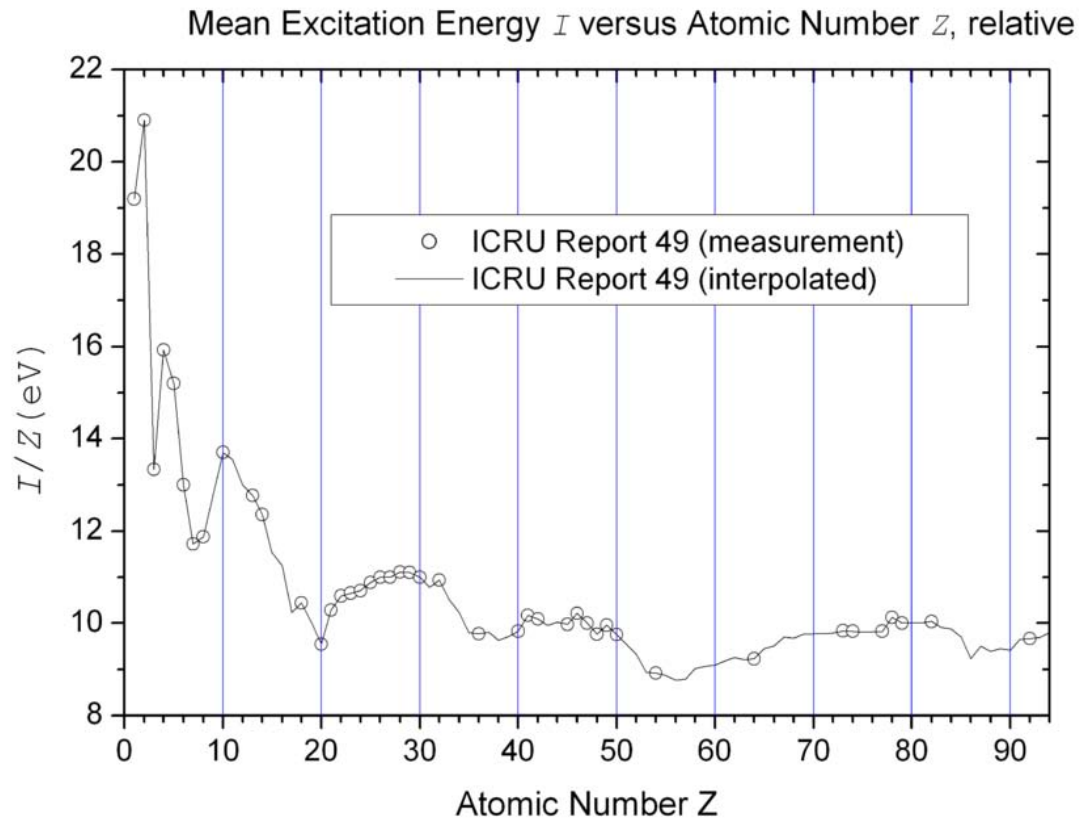
Ionization Energy (NOT \bar{I})



Courtesy of Nelson De Leon. Used with permission.

Mean Ionization Energy (\bar{I})

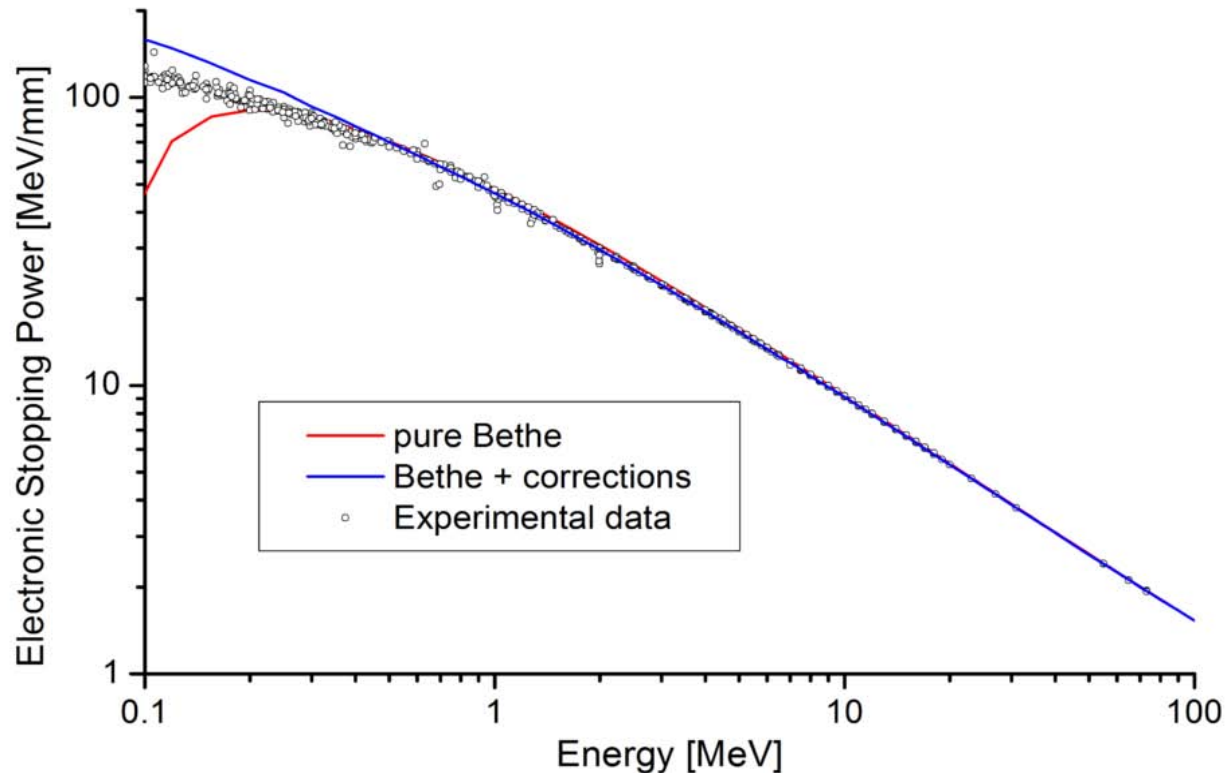
https://commons.wikimedia.org/wiki/File:Mean_Excitation_Potential.png



Public domain image.

Bethe Formula

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



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Bragg Curves, Ranges

Yip, Sidney. *Nuclear Radiation Interactions*.

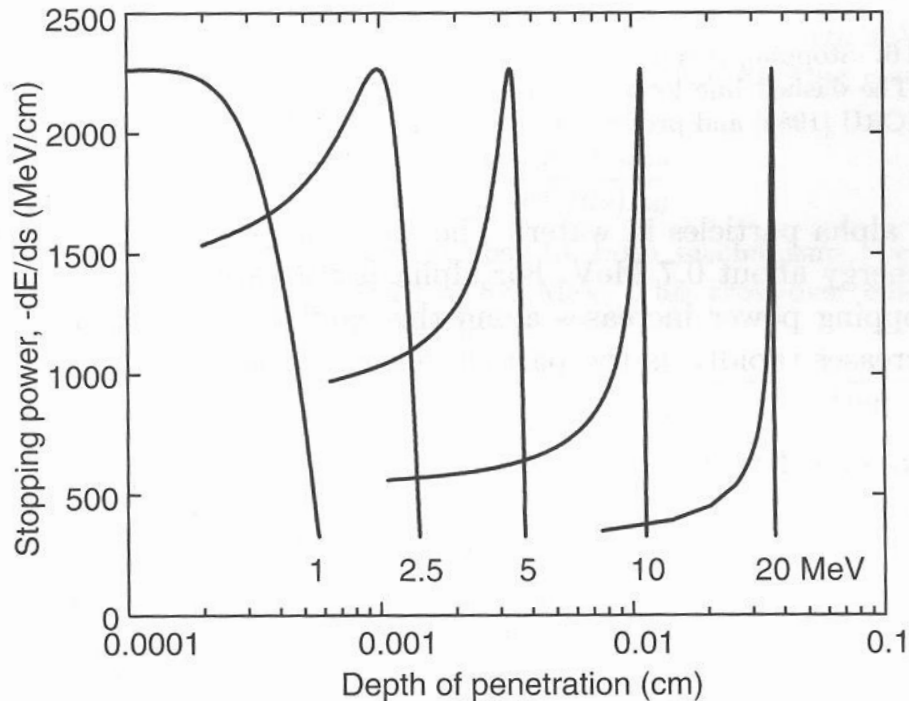


Figure 7.15. “Bragg curves” for alpha particles (helium nuclei) in liquid water: stopping power versus depth of penetration. Data obtained using the ASTAR program [Berger 1992].

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22.01 Introduction to Nuclear Engineering and Ionizing Radiation
Fall 2015

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