

CHAPTER OVERVIEW

2: The New Physics

Now that we have studied some of the properties of electrons and light and have seen that their behavior cannot be described by classical mechanics, we shall introduce some of the important concepts of the new physics, quantum mechanics, which does predict their behavior. For the study of chemistry, we are most interested in what the new mechanics has to say about the properties of electrons whose motions are in some manner confined, for example, the motion of an electron which is bound to an atom by the attractive force of the nucleus. An atom, even the hydrogen atom, is a relatively complicated system because it involves motion in three dimensions. We shall consider first an idealized problem in just one dimension, that of an electron whose motion is confined to a line of finite length. We shall state the results given by quantum mechanics for this simple system and contrast them with the results given by classical mechanics for a similar system, but for a particle of much larger mass. Later, we shall indicate the manner in which the quantum mechanical predictions are obtained for a system.

[2.1: A Contrast of the Old and New Physics](#)

[2.2: Probability Amplitudes](#)

[2.3: Further Reading](#)

[2.E: Exercises](#)

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