

CHAPTER OVERVIEW

13: Variational Methods

We have seen, in Sect. 8.3, that we can solve Schrödinger's equation *exactly* to find the stationary eigenstates of a hydrogen atom. Unfortunately, it is not possible to find exact solutions of Schrödinger's equation for atoms more complicated than hydrogen, or for molecules. In such systems, the best that we can do is to find *approximate* solutions. Most of the methods which have been developed for finding such solutions employ the so-called *variational principle* discussed below.

[13.1: Variational Principle](#)

[13.2: Helium Atom](#)

[13.3: Hydrogen Molecule Ion](#)

Contributors and Attributions

- [Richard Fitzpatrick](#) (Professor of Physics, The University of Texas at Austin)

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