

## CHAPTER OVERVIEW

### 2: Foundations of Quantum Mechanics

The concepts of quantum mechanics were invented to explain experimental observations that otherwise were totally inexplicable. This period of invention extended from 1900 when Max Planck introduced the revolutionary concept of quantization to 1925 when Erwin Schrödinger and Werner Heisenberg independently introduced two mathematically different but equivalent formulations of a general quantum mechanical theory. The Heisenberg method uses properties of matrices, while the Schrödinger method involves partial differential equations. We will develop and utilize Schrödinger's approach because students usually are more familiar with elementary calculus than with matrix algebra, and because this approach provides direct insight into charge distributions in molecules, which are of prime interest in chemistry.

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