

Timeline of Events in Chapters 9–12 of *Uncertainty*

Year	Event
1913	Bohr introduces his model of the hydrogen atom in which a single electron orbits a nucleus, and in which orbits are quantized.
1914	Bohr speculates that the existence of elliptical orbits and general relativity might explain the doublets observed in the hydrogen atom spectrum.
1920	Bohr and Sommerfeld propose theoretical model of the atom that allows for elliptical orbits of electrons around the nucleus; the model is based on three integer quantum numbers that describe size, elasticity, and orientation of these orbits.
1920	Sommerfeld introduces a fourth quantum number to explain the anomalous Zeeman effect. Heisenberg subsequently develops theory that requires that this quantum number take on values that are odd multiples of $\frac{1}{2}$.
1920	Bohr establishes his correspondence principle stating that the results of quantum mechanics should agree with classical mechanics in the limit of large quantum numbers.
1923	de Broglie suggests that particles might have wave-like properties and demonstrates that an electron in a Bohr orbit has a wavelength
1924	Bohr, Kramers, and Slater (BKS) propose a model for the interaction of light with atoms in which the atom behaves as a virtual oscillator allowing for interaction with light as a wave. Because the model is probabilistic, it does not require conservation of energy in individual collisions.
1925	Heisenberg develops quantum mechanics (later known as matrix mechanics) as a mathematical approach to modeling the atom
1926	Schrödinger develops wave equation (later known as wave mechanics) to describe electrons in atoms
1926	Pauli, Eckert, and Schrödinger separately show that wave mechanics and matrix mechanics are not fundamentally different
1926	Born suggests that Schrödinger's wave equation gives the probability of where a particle-like electron is likely to be found
1926	Einstein rejects Born's interpretation, noting that the Old One does not play dice
1927	Heisenberg develops the uncertainty principle that one cannot know precisely both a particle's position and its momentum