

## Timeline of Events in Chapters 13–16 of *Uncertainty*

| Year | Event  |
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| 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.  |
| 1927 | Bohr posits the principle of complementarity, that quantum objects have both wave-like and particle-like properties whose properties are contradictory, and that how you choose to observe a quantum object determines whether it behaves as a wave or as a particle.  |
| 1928 | Bohr formalizes the Copenhagen Interpretation of quantum mechanics, suggesting that the act of measuring defines what is being measured. In essence, prior to the act of making a measurement what exists is the probability of a possible outcomes described by a wavefunction; the act of measurement collapses the wavefunction into a single, definitive measurement, but at the cost of losing access to other possible measurements. |
| 1928 | Gammow proposes that alpha particles can be described as waves and explains radioactivity as a quantum event (what is now called tunneling).   |
| 1930 | At the Solvay Conference, Einstein proposes several thought experiments with the goal of disproving Heisenberg's uncertainty principle; Bohr successfully counters each.   |
| 1932 | Discovery of the neutron.  |
| 1935 | Einstein, Podolsky, and Rosen present the EPR paradox suggesting that quantum mechanics must be incomplete and that there must be yet unknown hidden variables that allow for objective reality.   |
| 1964 | Bell presents a methodology for testing the EPR paradox in which quantum mechanics and any hidden variable models must give different results. In all subsequent experiments of Bell's theorem the results are consistent with the quantum mechanical model and inconsistent with hidden variable models.  |