

The Origin of the Universe- The Big Bang Theory

Scientists believe that at one point in time, all the matter in the universe was packed together into one small, extremely dense, hot mass under enormous pressure. The event where this mass began to move apart is called the Big Bang Theory.

Scientists believe that the Big Bang occurred 10 billion to 15 billion years ago.

Stages of the Big Bang

| Stage | Time | Temp (°C) | Description |
|-------|-----------------------------|------------|---|
| A | 10^{-43} s | 10^{32} | An expanse of energetic photons |
| B | | Cooler | Rapid expansion causes cooling Basic components of matter form (quarks and leptons) |
| C | 10^{-4} s | cooler | Quarks combine to form protons (H) and neutrons |
| D | 3 min | 10 million | Protons and neutrons combine to form helium |
| E | 1 h | Cooler | Formation of helium stopped |
| F | $\frac{1}{2}$ million years | 3000 | Electrons combined with nuclei to form neutral atoms |
| G | 1 billion years | Cooler | First stars and galaxies formed by gravity |