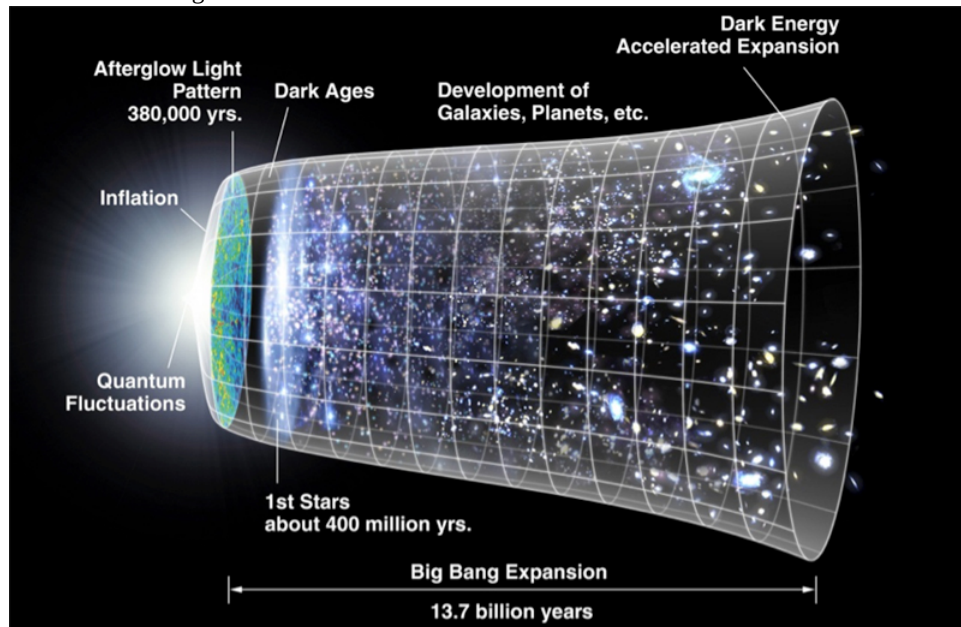


15.5: The Big Bang in Eras

To look at the development of the Universe through the Big Bang, astronomers have divided the development into steps or **eras**. These eras are our best scientific match to the data we currently have; they seem scientifically sensible. New data is being used to revise and heighten our understanding of these eras.



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The generally accepted Big Bang Eras include:

1. Planck
2. Grand Unification Theory (GUT)
3. Electroweak
4. Particle
5. Nucleosynthesis
6. Nuclei
7. Atoms
8. Galaxies

A summary of the Big Bang events occurred in this order:

1. Big Bang beginning – a bright and hot event →
2. **Planck Era** ; initial energy →
3. **Elementary Particles** – photons create particles and antiparticles →
4. **Inflation** of the Universe →
5. **Four Forces** become distinct (strong, weak, electromagnetic, and gravity) →
6. **Protons, Neutrons, Electrons, and Neutrinos** formed →
7. **Hydrogen ions fusion into helium ions** →
8. **Stable, Neutral Atoms** formed →
9. **Protoclouds** formed →
10. **Stars, stellar systems, galaxies** formed →
11. **Life, Humans; today**

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