



Evidence of the Big Bang

Recap of the Big Bang theory:

1. The Big Bang theory is a theory about the origin of our universe which states that roughly 13.7 billion years ago, an infinitely small and dense singularity rapidly expanded into what we now know as the universe
2. Based on the big bang theory the universe should be roughly 13.7 billion years old
3. A singularity is an infinitely small and dense point
4. The cause of the Big Bang is unknown
5. The Big Bang was not a massive explosion, but rather a massive expansion

Evidence to support the Big Bang theory

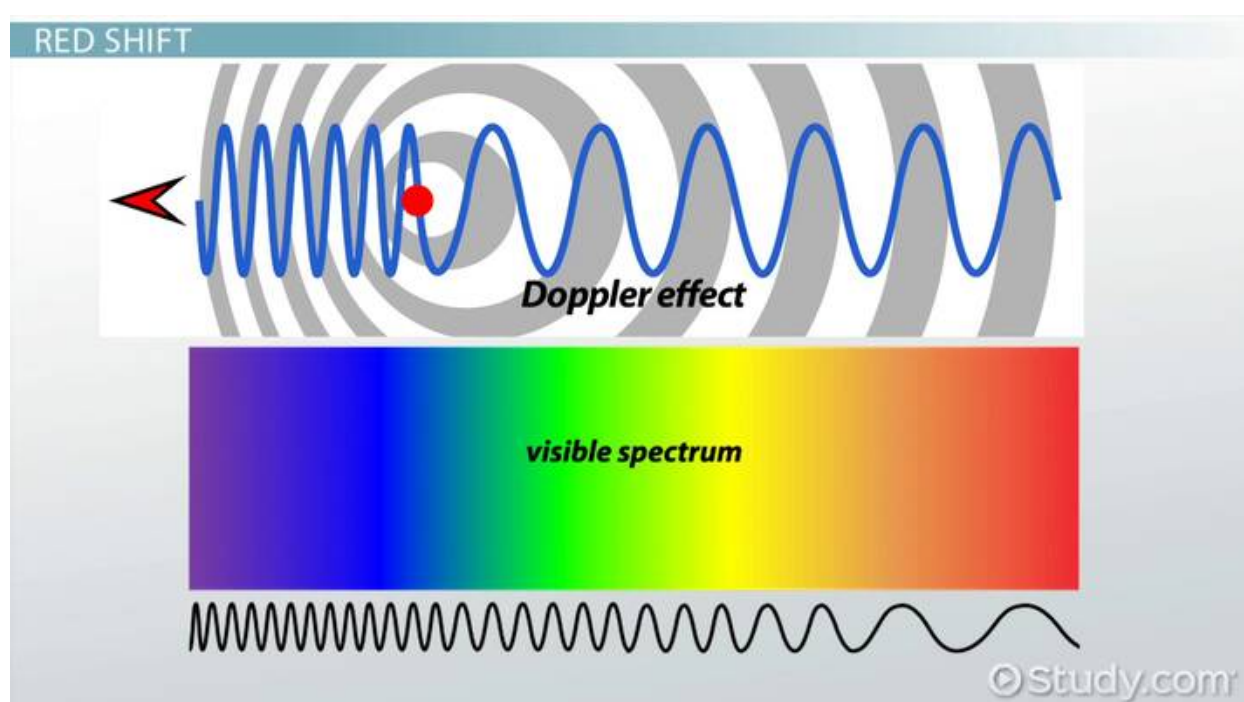
1. Redshift of most galaxies
2. Presence of cosmic microwave background radiation
3. Nucleosynthesis of nuclei larger than hydrogen

Doppler effect

- The shortening of sound waves as the emitter of the sound approaches you and vice versa
- Explains the phenomenon you can observe when a car passes you, the frequency becoming higher as it approaches and then lower as it veers away

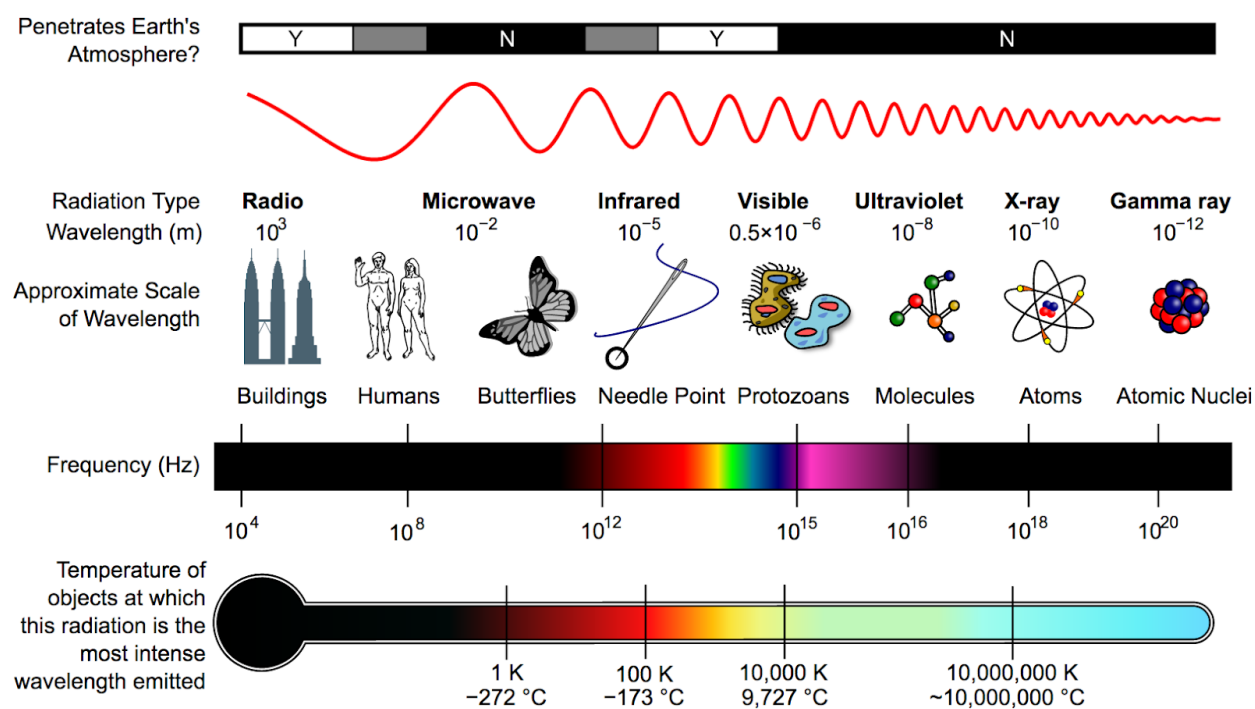
Redshift

- The Doppler effect but applied to light waves rather than those of sound.
- If something is moving away from you its light waves lengthen appearing redder while if it is moving towards you its light waves shrink, becoming bluer



Cosmic microwave background radiation (CMB)

- Residual energy from the rapid expansion that occurred during the Big Bang of the singularity in the form of microwaves, is present throughout the entire universe.



Nucleosynthesis

- The formation of nuclei larger than hydrogen which could have only happened as a result of the Big Bang

Nuclei

- Nucleus/centre of an atom
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