

Definitions and Concepts for CAIE Physics A-level

Topic 25: Astronomy and Cosmology

Big Bang Theory: The theory that the universe originated as a small, dense and hot region that expanded and cooled forming the structures in the universe we see today.

Emission Line Spectrum: A series of bright lines at specific frequencies that have been emitted by the gases present. Elements can only release photons of certain energies, and therefore frequencies.

Hubble's Law: The speed of a galaxy moving away from ours is proportional to its distance away from us. The constant of proportionality is Hubble's constant.

Luminosity: The total power radiated by a star.

Red Shift: The shifting of an object's wavelength towards the red end of the spectrum due to the object moving away from the Earth (Doppler effect). Red shift is evidence for the expansion of the universe. The more distant the object, the greater its red shift.

Standard Candle: Objects of known luminosity used as references to measure other stars and to measure the distance to stars.

Stefan's Law: A law stating that the power output (luminosity) of a star is directly proportional to its surface area and its absolute temperature to the 4th power.

Wien's Displacement Law: A law stating that the peak wavelength of emitted radiation is inversely proportional to its absolute temperature.

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