

IGCSE Physics (9-1) Specification 8(d)

(d) Cosmology

Students should:

8.13P describe the past evolution of the universe and the main arguments in favour of the Big Bang

8.14P describe evidence that supports the Big Bang theory (red-shift and cosmic microwave background (CMB) radiation)

8.15P describe that if a wave source is moving relative to an observer there will be a change in the observed frequency and wavelength

8.16P use the equation relating change in wavelength, wavelength, velocity of a galaxy and the speed of light:

$$\frac{\text{change in wavelength}}{\text{reference wavelength}} = \frac{\text{velocity of galaxy}}{\text{speed of light}}$$

$$\frac{\lambda - \lambda_0}{\lambda_0} = \frac{\Delta\lambda}{\lambda_0} = \frac{v}{c}$$

8.17P describe the red-shift in light received from galaxies at different distances away from the Earth

8.18P explain why the red-shift of galaxies provides evidence for the expansion of the universe