

WJEC England GCSE Physics

10.2 - Red Shift and the Big Bang

Flashcards

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What is red-shift?



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An observed increase in the wavelength of light from distant galaxies.



What two things can be said about the motion and wavelength of emitted light from a galaxy, the further away it is?



What two things can be said about the motion and wavelength of emitted light from a galaxy, the further away it is?

- The further away a galaxy is, the faster it is moving.
- The further away a galaxy is, the greater the observed increase in wavelength.



What does red-shift provide evidence for?



What does red-shift provide evidence for?

- Provides evidence that the universe is expanding.
 - Supports the Big Bang theory.



What does the Big Bang theory suggest?



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The entire universe started from a very small, hot and dense region in space.



Compare the observed red-shift of two galaxies, one further away than the other.



Compare the observed red-shift of two galaxies, one further away than the other.

- The galaxy that is further away is travelling faster.
- The observed red-shift is greater the further away it is.



What did scientists observe to provide evidence that the universe is expanding at an ever faster rate?



What did scientists observe to provide evidence that the universe is expanding at an ever faster rate?

They observed supernovae, which suggested that galaxies are moving away at an ever faster rate.



Prior to observations of supernovae, what was believed about the rate of expansion of the universe and why?



Prior to observations of supernovae, what was believed about the rate of expansion of the universe and why?

- The rate of expansion was expected to occur at an ever slower rate.
- It was thought that gravitational forces would cause this slowing down.



What two ideas could explain the universe's ever increasing rate of expansion?



What two ideas could explain the universe's ever increasing rate of expansion?

- The existence of energy and mass that we can't detect, known as dark matter and dark energy.
- These ideas are still being developed by scientists and are not yet fully understood.

