

WJEC Wales Physics GCSE

2.6 - The Universe

Flashcards

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What is used to split light into its different wavelengths?



What is used to split light into its different wavelengths?

A diffraction grating.



What can line emission spectra identify?



What can line emission spectra identify?

Different elements, since the spectra for each element is different and unique.



How did scientists identify the chemical composition of stars?



How did scientists identify the chemical composition of stars?

Observe the light they emitted through a spectroscope and compare the line absorption spectra with the spectra of known elements.



What is red-shift?



What is red-shift?

An observed increase in the wavelength of light caused by the source moving away from the observer.



Who observed spectra from distant galaxies to demonstrate red shift?



Who observed spectra from distant galaxies to demonstrate red shift?

Sir Edwin Hubble



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?



What does the Big Bang theory suggest?

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 does CMBR stand for?



What does CMBR stand for?

Cosmic Microwave Background Radiation



What does CMBR provide further evidence for?



What does CMBR provide further evidence for?

- The Big Bang Theory
- It is believed that CMBR originates from radiation produced in the big bang



How does the existence of CMBR support the expansion of the universe?



How does the existence of CMBR support the expansion of the universe?

- It is thought that gamma radiation was released in the Big Bang.
- The expansion of the universe has stretched this radiation, resulting in the microwave radiation present today.

