

# Edexcel GCSE Physics

## Topic 7.8P-7.15P - The Big Bang

### Flashcards

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# Describe the Steady State theory



## Describe the Steady State theory

The Steady State theory says that the universe has always existed but is expanding and creating matter to counteract the loss in density.



# Describe the Big Bang theory



## Describe the Big Bang theory

The Big Bang theory states that the universe expanded from a very small dense point about 14 billion years ago.



# What is red-shift?



## What is red-shift?

A perceived increase in the wavelength of light due to the source moving away from the observer.



# What does red-shift provide evidence for?





# What does red-shift provide evidence for?

- The universe is expanding
- This 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?



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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 more slowly
- 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

