



The Big Bang Theory

The Universe

- Some theorists suggest that it is infinite, while others believe that it may be many or billions

Is it expanding?

Edwin Hubble, an American Astronomer, observed that distant galaxies looked a bit red, which he inferred meant the galaxies were speeding away from earth.

Fun fact:

This is the reason the world's strongest telescope is called the Hubble space telescope.

One analogy to represent this theory, is that there was an ant atop an expanding balloon with galaxies drawn to it. As the balloon gets bigger, the ant sees the galaxies moving away.

Theories of an expanding universe

There were two core theories in the 1950's.

Steady State Theory

This theorem stated that the universe is infinite and expanding with matter being created all the time to maintain a constant universal density.

Big Bang Theory

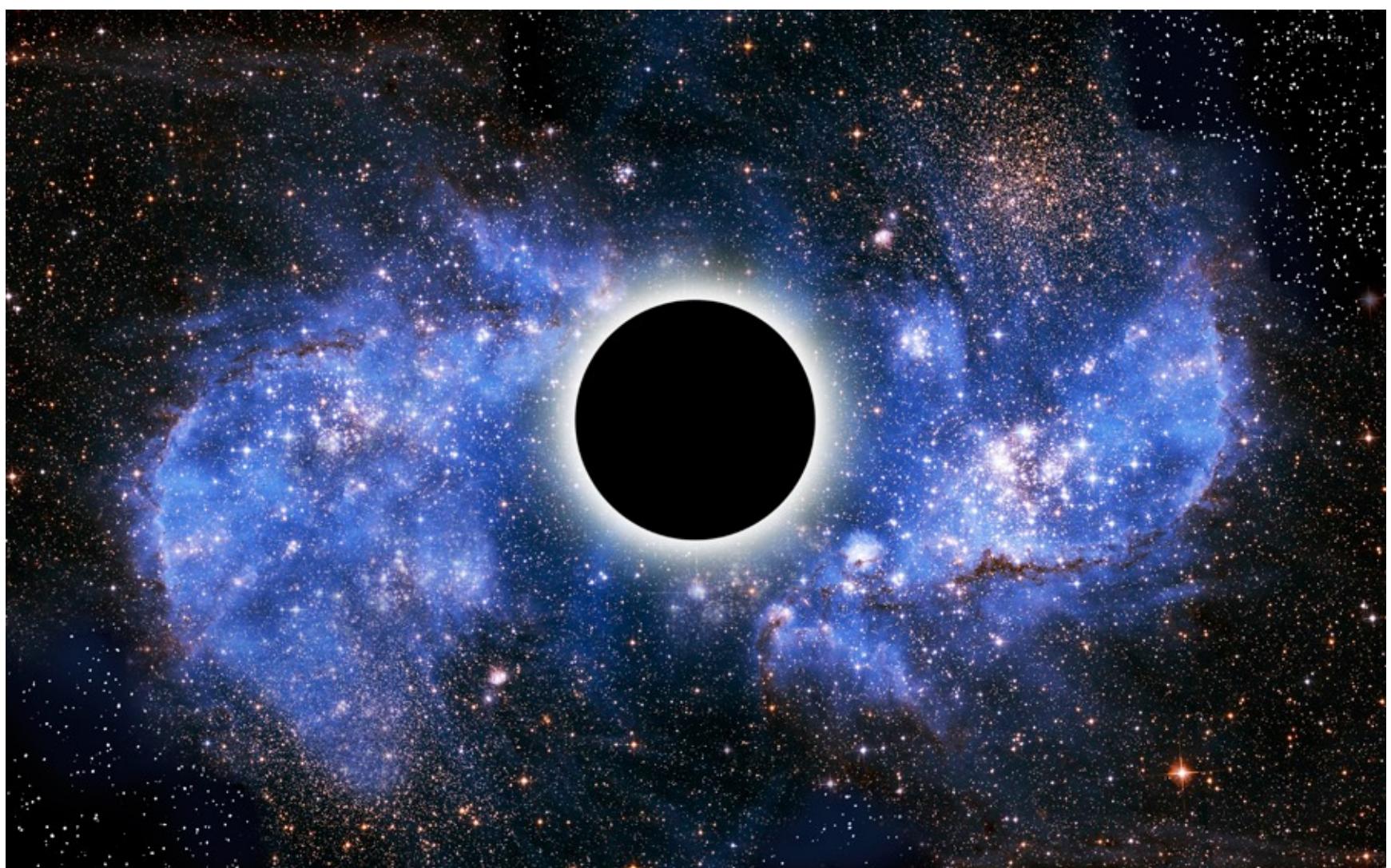
This theory stated that all galaxies are moving away from each other, that if time was run backwards, logically it implies that all matter must have originated from a single area.

What is the big bang theory?

- The big bang theory suggests that the universe was created around 13.7 to 13.8 billion years ago from a small, dense singularity.



A singularity is a point at which an infinitely dense matter occupies an infinitely small space



The Beginning of everything - Video

- What is the name of the scientific field that studies the universe?

Cosmology

- Who first noticed that the universe seems to be expanding?

Edwin Hubble

- What was the observation that led to the above notion?

Distant galaxies looking a bit red.

- If the universe is expanding, then it must have started with a monumental **explosion** of an infinitely **hot** and infinitely small **point**.

- What was The Big Bang explosion?

The big bang explosion was the result of a singularity of infinite smallness, infinite heat and infinitely dense reaching the end of its life span (exploding randomly) leading to a massive explosion.

- How big was the universe 1 second after The Big Bang?

$100,000,000,000 \text{ km}^2$.

- What existed prior to the Big Bang?

We simply cannot know.