DARK MATTER

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What is **Dark Matter**?

Dark matter is a hypothetical, non-luminous type of matter which is believed to exist in space.

It doesn't interact with electromagnetic forces.

It doesn’t absorb, reflect or emit any light or energy.

When it was first discovered, it was thought to cover 85% of the universe, but now the scientists think it only covers about 27% of the universe.

Scientists are more sure of what **dark matter** is not, than what it is.

Two forms of Dark Matter

Cold Dark matter

- Particles interacting weakly
- These particles move slowly compared to the speed of light
- This form of dark matter interacts very poorly with electromagnetic forces.

Hot Dark matter

- High energy particles
- These particles move incredibly quickly
- These particles don't absorb or emit light
- There exists no agreement in the theoretical physics community as to whether dark matter is divisible into various 'types', but there exists evidence for differentiating dark matter into "hot" and "cold"

How do we know it exists?

The only evidence, we have of **dark matters** existence is that according to calculations, galaxies without this **dark matter w**ould just fly apart instead of rotating.

Scientists noticed that the stars and other objects rotating in the Milky Way galaxy, were further apart from each other than the ones closer to the black hole in the center.

This brought them to the conclusion that there must be some invisible matter holding the galaxy's spiral form together, thus preventing the particles from flying away.

Detecting Dark matter

Dark matter is different compared to visible matter found in our universe.

The fact that it doesn't interact with electromagnetical forces makes it incredibly hard to detect. Scientists have only been able to detect it from it's gravitational effects on visible matter.

Large amounts of **dark matter** is also thought to cause gravitational lensing.

Simulation of dark matter in the Milky Way halo

In this simulation we can see that places with high amounts of normal matter like galaxies supposedly also contain lots of **dark matter**.

Dark Matter and Black Holes

Dark matter is often confused with black holes, or it’s said to be the same thing as black holes.

A black hole is a concentration due to gravity that exists in matter such as stars and light.

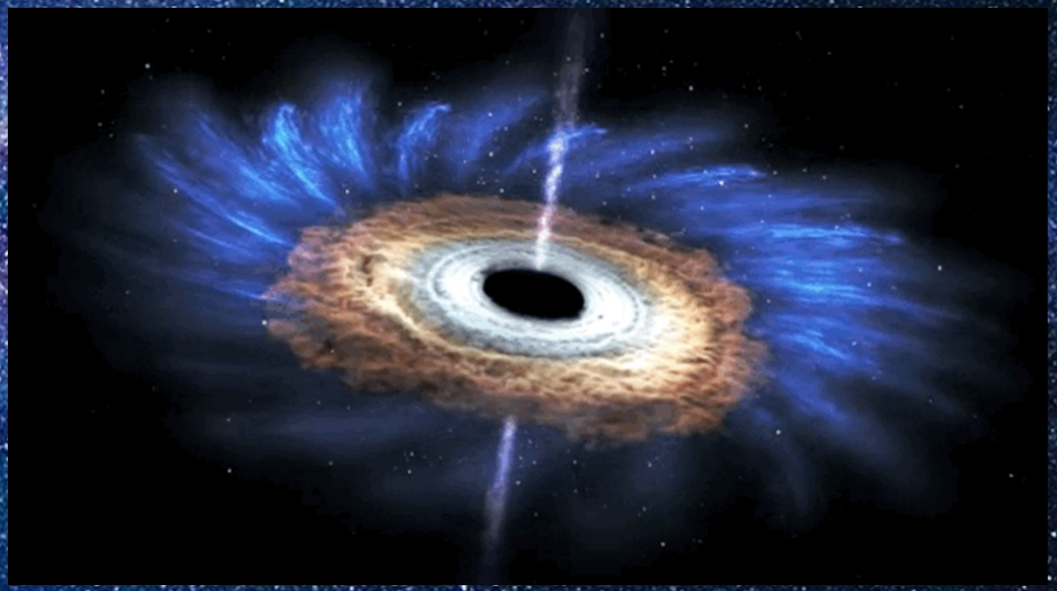
Black holes are usually formed by a collapsing star.

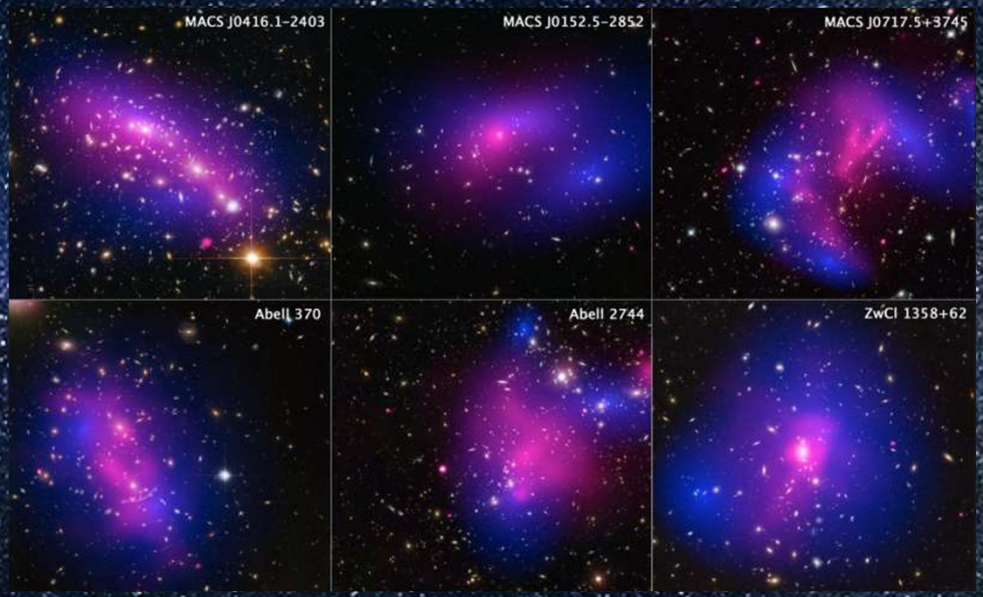
Dark matter is an invisible matter that does not interact with visible matter.

Dark matter also doesn't pull light or any other objects into itself, like black holes do.

Nobody really knows where the dark matter comes from.

Dark Matter and Black Holes



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