# 3 knowns and 3 unknowns about dark matter

June 8 2016, by Glenn Roberts Jr

What's known:

## 1. We can observe its effects.

While we can't see dark matter, we can observe and measure its gravitational effects. Galaxies have been observed to spin much faster than expected based on their visible matter, and galaxies move faster in clusters than expected, too, so scientists can calculate the "missing mass" responsible for this motion.

## 2. It is abundant.

It makes up about 85 percent of the total mass of the universe, and about 27 percent of the universe's total mass and energy.

## 3. We know more about what dark matter is not.

Increasingly sensitive detectors are lowering the possible rate at which dark mark matter particles can interact with normal matter.

## What's unknown

## 1. Is it made up of one particle or many particles?

Could dark matter be composed of an entire family of particles, such as a theorized "hidden valley" or "dark sector?"

## 2. Are there "dark forces" acting on dark matter?

Are there forces beyond gravity and other known forces that act on dark matter but not on ordinary matter, and can dark matter interact with itself?

## 3. Is there dark antimatter?

Could dark matter have an antimatter counterpart, as does normal matter, and is there a similar imbalance that favored dark matter over "dark antimatter" as with normal matter-antimatter?

Provided by University of California - Berkeley

Citation: 3 knowns and 3 unknowns about dark matter (2016, June 8) retrieved 20 August 2024 from https://phys.org/news/2016-06-knowns-unknowns-dark.html