

# Scientists have finally discovered the mystery of dark matter in the universe

Scientists have found a particle, which could be the source of dark matter in the universe.

As much as 80% of the universe is dark matter, we know its existence and have studied dark matter for decades, but its physical origin remains a mystery. Although they cannot be observed directly, scientists know dark matter exists due to the gravitational interaction with bright matter, such as stars and planets. Dark matter consists of particles that do not absorb, reflect or emit light.

Recently, nuclear physicists at York University in Canada claimed to have discovered the mystery of dark matter in the universe. They discovered a new type of auxiliary atom, called the d-star hexaquark.

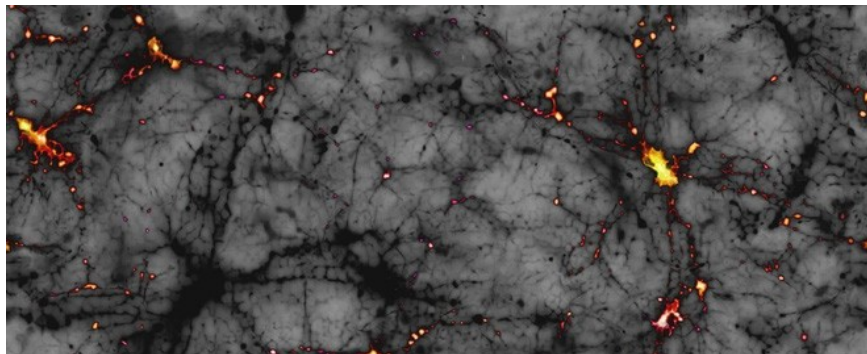


The particle is composed of six quarks, the basic particles usually joined in triplet to form protons and neutrons. Importantly, the six quark particles inside the d-star are more flexible, making them able to combine them in ways that are very different from conventional protons and neutrons.

Quarks are elementary particles, often joined in sets of three to form protons and neutrons. Particles made up of 3 quarks are collectively known as baryons. Most of the visible matter in the universe is created from these baryons. So are our bodies baryons, the Sun, planets and dust.

When 6 quarks combine, it produces a type of particle called dibaryon or hexaquark. This is a seed that is not commonly seen and has not been studied much. D-star hexaquarks are also special because they are actually

bosons, meaning Bose-Einstein statistics, a statistic that describes how particles work. In this case, that means that d-star hexaquark particles can form something called the Bose-Einstein condensate, the fifth state of matter.



The team hypothesized that, after the Big Bang explosion formed the universe, the d-star hexaquark particles were released a lot. As the universe cooled and expanded, they joined together and condensed, to form the fifth matter state (the Bose-Einstein condensate state).

This state is formed when a low-density gas of boson particles is cooled to near absolute zero. In this state, the atoms change from the oscillating state to still, the lowest quantum state possible. Therefore, they also do not absorb, reflect or emit light.

Dr. Mikhail Bashkanov and Professor Daniel Watts from the Department of Physics at York University, have published their first research on the type of particles that make up the dark matter of the universe.

Professor Daniel Watts said: *'The origin of dark matter in the universe is the biggest question scientists have, so far no answer. Our research shows that condensation of d-star particles can form dark matter. The results of this study are very interesting, because it does not require any new concepts of modern physics.'*

Dr. Mikhail Bashkanov said they will continue to study how these d-star particles interact with each other, and work with scientists in the US and Germany to test the hypothesis. If this theory is correct, we will soon discover the whole mystery of dark matter in the universe.

*References: sciencealert, BGR, scitechdaily*

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