

Dark matter - history of research and modern hypotheses

Dark matter is a term for the matter in the universe that cannot be observed. But this matter can be detected by its gravitational effect on other bodies. One of the greatest astronomers and astrophysicists of all time, Fritz Zwicky, who will forever associate his name with the stars and the study of dark matter, was born in Bulgaria - the city of Varna, shortly before the dawn of the new twentieth century, on February 14, 1898.



At the modern stage of the development of astronomy, there is a number of evidences - observational and theoretical - that show that more than 90% of the mass in the universe is dark matter of unknown origin. The only way this matter can be observed is through its gravitational influence on the visible part of the universe.

The nature of dark matter is completely unknown. It can have baryonic or non-baryonic origin. Baryonic dark matter could be composed of planets and low-mass stars, such as white dwarfs, neutron stars, and black holes, which are the final stages of the evolution of massive stars.



It is possible that dark matter contains supermassive black holes. Recently, there has been growing interest in the thesis that dark matter is composed of non-baryonic elementary particles, remnants of the Big Bang. However, they are hypothetical for now.



The difference between the visible and the dynamically measured mass in the universe can be explained in a fundamentally different way - through other physical laws. Modifications of Newton's theory of gravity have been proposed in which the dynamics of galaxies are explained without dark matter. As radical and improbable as these theories may seem, they would be very important if they turned out to be true.