

The 3-cosmic framework of the Universe can hold Dark Matter and Dark Energy

Cosmology has two long-standing models that are completely opposites: the Aristotle model and the Platonic model. The Aristotle model holds that physical reality is the source of the world, and that mathematics is only a useful tool for an approximate description of physical reality. The Platonic model holds that purely mathematical structures are truly "real" and that all observers can only perceive physical reality imperfectly. The earliest human development sciences were all derived from observing physical phenomena and then deducing mathematical theorems; For example, Newton saw an apple fall from a tree and deduced the law of universal gravitation, which is Aristotle's model. But the rapid development of modern science has created many new mathematics. Theoretical physicists lean toward Platonic school, and mathematical structures such as mathematical equations, or more generally, numbers, vectors, geometric figures, etc., can describe our Universe with incredible realism. They wonder why mathematics describes the Universe so perfectly because it is born mathematical, and all physics comes down to a fundamental mathematical problem. But for the Aristotle school, this question is meaningless, because the physical origin of the Universe is what we observe, not only can the Platonic school avoid it, but it is confused as to why it cannot be something else.

If the Universe is inherently mathematical, why is it based solely on the "that one" mathematical structure? Be aware that mathematical structures are diverse. But modern theoretical physicists believe that any compatible physical theory can be expressed as some kind of mathematical structure. Since so many solutions cannot be selected under the framework of String theory which one is particularly good, the Universe corresponding to each solution will exist. It's just that the laws and constants of physics in our Universe happen to be in our current state, and as a result, "people" are produced, and then only anyone will think of such a thing; Other cosmoses are not, this is the "Anthropic Principle". Therefore, excluding parallel Universes or multiple Universe (multiverse) that we cannot see also needs to be in line with humanistic principles, which is the scope of our discussion. Therefore, our Universe also needs to conform to Anthropic Principle, which is the scope of our discussion.

Scientists use academic discourse to explore scientific problems, and rarely take some of the deeds that have happened in our world as research information; In particular, the Platonic theoretical physicists' study of the multiverse is the most classic. However, the existence of the multiverse, although the deduction of mathematics has made the public know that there is such a thing, but for a long time only by astronomical observation, there are rare clues to be found, and there is still no way to do anything. I personally challenge this purely academic approach, follow the "Anthropic Principle", and start to study separately, and explore the space of the Universe from the perspective of what happened in the human world, or could find a way out.

Today's scientific development has reached a very high level, but in the natural sciences, research still encounter bottlenecks. The problems posing the greatest headache for scientists lay with dark matter and dark energy. Dark matter of the Universe is a hypothetical form of matter, which puzzles scientists about 100 years and no solution yet. Most experts think dark matter is abundant in the Universe and has had a strong influence on its structure and evolution. In the observable Universe, there is no indication that the Universe is expanding at an accelerating rate, and cosmologists have hypothesized the existence of some unknown "dark energy" to explain this phenomenon.

In 2018, after the Planck satellite probe observed the cosmic microwave background radiation (CMB or CMBR), scientists deduced that the Universe is composed of less than 5% of normal matter, such as planets, stars, asteroids, and gases, etc., the remaining 95% is dark matter and dark energy, of which dark matter that does not radiate or absorb light accounts for about 27%, and dark energy accounts for about 68%. Scientists believe that dark energy is the force that tears the Universe apart, but dark matter condenses all things, and that the interaction of these two forces forms the structure of the Universe, as we know it today.

As long as we can understand the assembling speed of the galaxy, we can understand dark matter, also understand the power of dark energy tearing the Universe at the same time. Therefore, dark matter may be the best tool to study dark energy in the end. To understand dark matter now, I will probably get an answer from the most famous “String Theory”.

String Theory is based on a ten-dimensional spacetime that is considered to universally exist. According to “Causality”, an effect cannot occur before its cause, which means time has a direction and cannot be divided into some different parts. So one-dimensional time is taken as a common standard in order of events in the Universe. Following the “Anthropic Principle”, which is the simple fact that we live in a Universe set up to allow our existence, three-dimensional space and one-dimensional time are taken as one cosmos as our living world. Therefore, the nine-dimensional space can be divided into three portions, and each portion has a common time standard, which means that there is a 3-cosmic framework in the Universe, called the multiverse.

In the multiverse, among any other world, there are no basic interactive forces of nature except gravity, i.e., the graviton in the field of gravity can penetrate all the cosmoses; however, the light cannot. So dark matter may be situated in the cosmoses other than ours; in other words, the multiverse can contain dark matter. The best method of exploring dark matter is to start from Earth where we live.

In the current Earth model utilized in seismological investigations, such as body-wave travel times, surface-wave dispersion, and free oscillation periods for researching the chemical composition and the density distribution of the Earth, one can analyze some data of Earth. According to the characteristics of Earth's interior, equitably examining its constitution, composition, density, and pressure from a different view of the core, the special arguments are put forward. It is inferred that the solid rock and the molten rock or the magma change states interactively at the CMB. According to this model, the chemical compositions are similar in both sides of the CMB, and the curve of density distribution is continuous.

In the low viscosity F-layer of the outer core, the high temperature causes some elements and oxides of magma to undergo oxidation-reduction reactions and separate due to its gravity. The great amount of heat is produced from chemical reactions in the F-layer and radioactive element generated nuclear energy in the Earth's interior which serves as the main power source for the geo-dynamo of the great convection cell. It is the great convection cell that the flow of the magma and the solid or molten rock migrating up to the crust and down across the CMB to the lowermost F-layer of the outer core.

Based on the new conception and applying a simplified method, we apply the different density distribution curves of the model in the core to calculate the data of Earth and then compare it with the existing current data of Earth. The insufficient mass and moment of inertia are the missing matter which are taken as the parts of dark matter, and then a suitable new Earth model is developed. Apply the simplified method to

evaluate the Earth's mass and moment of inertia, which are found to be only 85.73% and 94.82% respectively of the current data.

By the two insufficiencies of Earth's mass and moment of inertia, formulating the reasonable assumptions, a dark planet inside the earth has been figured out, then calculate gravity and pressure in every depth within the Earth to check suitability or not. Finally, a planet of dark matter, called dark planet, with a radius of 3700.375 km, about 1.33 times of Mars, is reasonably inside the Earth in the extra dimensions of space other than ours. The new Earth model may be confirmed from Chandler wobble, and then some great scientific problems, such as: dark matter, dark energy, and the constitution of Earth's interior etc., have been roughly solved. The 3-cosmic framework of the Universe is roughly established.

To research dark energy, we apply the eight data of cosmological parameters of Wilkinson Microwave Anisotropy Probe (WMAP) results and Planck Satellite results from 2003 to 2018 for 15 years, to form a table of cosmological parameters from WMAP and Planck Satellite. In the table, the value of dark energy density decreases gradually 4.8%, but the total matter density increases gradually 4.8%. The dark energy loss is equal to the increase of total matter that is consistent with the Big Bang Theory.

We may imagine that at the first moments of the Big Bang, the full energy (100% energy) of the Universe gradually transforms, and after 13.8 billion years, there remains 68.42% energy, which is called dark energy, and 31.58% has been converted to matter. According to the Big Bang Theory, we should take the current dark energy as the residual energy of the Universe after the Big Bang.

According to the table, cold dark matter density increases gradually 4.3%, and baryon density in our cosmos increases gradually only 0.5%. Because matter transforms from energy after the Big Bang, the baryon density increasing value is very small, which indicates energy in our cosmos is so poor that we can label ours the low-energy-density cosmos. On the contrary, the dark matter density increasing value is so large that we can label the other cosmoses as the high-energy-density cosmoses.

Under the 3-cosmic framework of the Universe, the rate of expansion in the high-energy-density cosmoses will be much higher than that of a low-energy-density cosmos as ours. When the high-energy-density cosmoses expand more rapidly than our cosmos, its matter (i.e., dark matter) will expand at the same pace, which will use gravity to drag on the stars of our cosmos away at an accelerated pace, the pulling effect of which causes us to view an accelerating expansion of our cosmos.

Although the 3-cosmic framework of the Universe and the model of the Earth have been already deduced in this book, i.e., the 3-cosmic framework of the Universe can hold dark matter and dark energy, that is only a preliminary outline. I hope that this can server as the brick thrown to lead the jade, receive the approbation of other scientists, so that talented persons of younger generations will more thoroughly research this topic, with the most rigorous mathematics to interpret, and then use the latest technology to test the truth of the Universe.

Newidea Research Center

Asien-Jung Ao

March 2023