

The universe is very  
vast



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### **The Scale of the Universe**

The Universe is very vast. Many unanswered questions of life lay hidden beneath this place so unfamiliar to our society. This mysterious dark sky that we are floating in is supposedly constantly expanding to no end. Is there an edge? Well apparently there is no center to this expansion nor is there a fixed scale we know of. It's just an overall expansion everywhere merging into one another and only getting vaster. Will it ever stop expanding, or is there constant velocity acting on things all over, due to gravitational pulls coming from everywhere? The Big Bang which is supposedly the cause of the world we live in today was no ordinary explosion. According to studies from Edwin Hubble in 1929, there is no centre of the universe. These are many questions and statements that are yet to be answered and further investigated. We have come up with many assumptions in which many make sense but what is the truth behind all of this? Nuclear physics may have the answer to many of these questions. I find this topic most interesting simply because of the endless conclusions we can come up with, and the way things have been left so unsolved intrigues me.

The Universe is defiantly immense. Earth is a planet in a solar system that is in a galaxy that lies in the Universe. Could the universe be within something too? A Multiverse or an omniverse, so in this case scenario our universe is just one of many others although in English connotation Universe implies everything beyond. The Compact Oxford Dictionary defines the " Universe" as " all existing matter and space considered as a whole; the cosmos." We would like to be able to give the Universe a scale but in order to do so we would have to know the content of everything within it. Throughout history

our society has come with many conclusions to try to understand where and how we are situated in our solar system, in the galaxy and now in the universe. People used to think that the Earth was the centre of the Universe and that everything revolved around it. We were wrong. Earth and the other planets in our solar system revolve around the sun. We later deduced that the sun was the center of everything and that things revolved around it. Once again this was false. It turns out that there are many solar systems in our galaxy and many suns. We then thought that our galaxy was everything. As a result we were wrong again, there are many other galaxies. All of these are wrong statements, we may still be wrong today. There are as many galaxies or even more in the Universe as there are stars in our own galaxy. There are even clusters of galaxies and clusters of clusters which are called Superclusters which make up the Universe. We would love to give the universe a scale but we can only determine the edge by what light beams have been able to travel past, thus the distance is calculated in time taken by a light ray. The extent of what we can see in the Universe would take 15 billion years at light speed to reach that area. We see no further since light has not traveled that far yet.

We assumed that the Universe is constantly expanding and over time different factors will affect things. Here is a graph that shows the scale of the Universe versus time. The graph shows three factors that supposedly contribute to the Universe's expansion: Constant Dark Energy, Big Rip

Big Crunch is what scientists see as the expansion of the Universe and its fate. The curve determines in what way the Universe is expanding. If we look at the graph carefully it states that at the beginning of times, things were

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created by this mysterious Big Bang. Eventually these three components (Big Rip, Constant Dark Energy and Big Crunch) started to increase. The Universe was expanding (Big Crunch), the amount of dark energy was increasing and things were constantly being split into pieces, divided and chopped due to the theory of Big Rip. Things have stayed this way till present time but eventually in the future scientists predict that due to this constant effect of the " Big Rip" the Universe would eventually collapse which is stated by the down curve of the " Big Crunch".

All in all scientists predict an eventual implosion of the entire Universe, due to its constant expansion which is supposedly being expanded by shreds of particles being ripped apart. Is there a definite scale to the Universe? We cannot tell but we assume that it is constantly expanding. I would have thought that we are under the illusion of this expansion and that it is simply that we cannot see further since light rays have not traveled that far for us to be able to see any further. My theory can be proven since the furthest we can see has taken a ray of light to travel all that distance since the big bang. What I believe is that there is something faster than the speed of light and the explosion of the Big Bang has brought things further away faster than a ray of light can travel. I believe that there is no existence over there but there is matter, atoms and particles. If I believe what scientist say I could assume that the distance of the Universe is 15billion light years. The distance a light ray has traveled since the Big Bang. This is possible since the speed of light in Einstein's theory of relativity is only an axiom on which he bases the rest of his theory.

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