PHYSICAL SCIENCES

A NEW APPROXIMATION TO DARK MATTER

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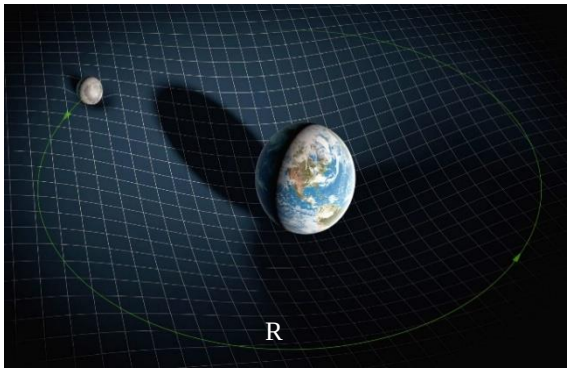
Abstract

In modern physics, the idea of creating general theory have faced to big problems.The main one is related to the properties of gravitational field.Giving unique theory of gravitational field with other interactions causes difficulties. Besides it, the exitence of dark matter which surrounds us and can't be observed is proved.According to the properties of this matter, the existence of it in multidimensional space and relation of it with gravitational field is given.The existence of this relation is determined according to lots of facts

Keywords: gravitational field, multidimensional space, dark energy,dark matter.

The attraction events in universe have always been interesting to us. Let's see Isaac Newton's idea about attraction: l discovered attraction force and calculated the value of it, but l don't know where it was created from and why celestial objects attract each other.Although there is such a big gap between celestial objects they attract each other.For such a problem, later A.Einstein said that, space isn't a gap. Time and location is a whole and looks like a cloth material.Each body having a mass wraps this material and a cavity is created around a wrapped material [1] The amount of wrapping depends on mass of the body, it means how bigger the mass, and the more is cavity.So less massed objects circulate around objects with large masses. By getting far away from this cavity circulation velocity decreases.According to Einstein ,this material is present in 4-dimensional space. This fact(physical field,interaction force) is complete among distance and conditions which balance chances of interaction and which differ events. Although things which exist in universe show different properties in different places they are complete.More exactly,although we observe them in a different way they are unique. This fact demands certain regularities for distribution of masses for concrete celestial bodies. Let's explain this regularity via Einstein's model. As we know, f=GM\R is potential of attraction field and M/R =f/G must be constant at given distance where G-gravitational constant,M-cirlce of celestial object,R-gravitational radius ofcelestial object ,f-potential of attraction field. Potential of attraction field is finite field having equipotential surfaces. For equilibrium of celestial bodies,from the point of energy,their potential energies mustn't differ. it means distance which have attraction radius must have a value that their potentials are same. Main reason of equilibrium of universe is conservation of this equilibrium. Change of this potential yields to different motions. Let's prove this fact mathematically

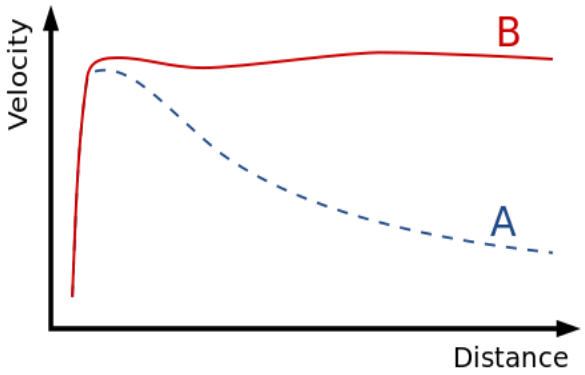


$$\frac{M_G}{R_G}=\frac{1988.8\times10^{27}}{1455\times10^{9}} \approx 1{,}015\times10^{18} kg/m; \frac{M_y}{R_y}=\frac{5.97237\times10^{24}}{384.4\times10^{6}} \approx 1{,}015\times10^{18}\ \text{kg/m}$$

We see from calculations that: $\frac{M_G}{R_G} \approx \frac{M_y}{R_y}$ so,M=χ**R** is conserved. here χ-is constant,and its value is $\chi \approx 1{,}015\times10^{18}\frac{kg}{m}$ Approximate value for constant χ is completely normal. Because we can't know gravitational radius and mass of the celestial body accurately. Also as there is the influence of other celestial bodies to this body, there is less accuracy here. Einstein's model can explain theese facts so he was right. Gravitational field is really a field which exists in 4-dimensional form and it is created by mass. Nowadays,the main reason for uncompleteness of "m theory" which

known as " theory of everything" is properties of gravitational field. As Einstein said we can suppose gravitational field as a field exist in 4-dimensional space.As a result of it, scientists face difficulty during including of gravitational field to any general theory.So gravitational field doesn't refer to 3-dimensional space completely, it can't be characterized by 3-dimensional space. Let's explain this oppinion a little. As we know 3-dimensional space where we live consists of combination of many 2-dimensional spaces. Similarly, 4-dimensional space also consists of combination of 3-dimensional spaces. We can never understand 4d space because we never see what it looks like. We can't imagine the thing that we have never seen.For this reason,we can't see and undrstand events, objects, beings occur at 4- dimensional space. In 3-dimensional space each object has mass form and etc. But we can't say same fact for 4 -dimensional space. As we say above 4-dimensional space consists of 3 dimensional spaces. So 3-dimensional space that we live in is located inside the 4-dimensional space.it means 4-dimensional space is larger compared to 3-dimensional. Let's see some facts that belongs 4-dimensional space.

In 1932, astronomer Jan Hendrix Oort investigated stars around our galaxy and calculated the amount of mass needed for stars in top and bottom to stay at certain altitude . But he faced to interesting fact. He calculated mass heavier 3 times than visual mass [2].Later in 1933, American astronomer Fritz Zwickyi from Switzerland analyzed that there is a collecting galaxy that consists 1000 galaxies and he was shocked a lot when he calculated gravitational force which contains galaxies together. Because calculations were leading to the fact that there must be existence of very big mass[3]. Actually,theese existing mass and galaxies must go far away from each other with high velocity. But his idea wasn't assumed seriously for 40 years. Let's note how he made calculations. As we know moon rotates around earth in a specific velocity. If Moon rotated in high velocity at that time it would go far away from Earth's attraction.if rotated with less velocity rahther than known velocity it would fall down to Earth. similarly, if mass of Earth was larger ,Moon would circle with high velocity around it . In a short, we can define mass of Earth using constant velocity of Moon and define mass of Sun by using constant velocity of Earth. If we apply this prinsip to orbits of stars around galaxy we can calculate how much gravitational force exist here and how much matter exists .If its existence isn't enough so there must be matter that we can't see and calculate but accept its existing.in 1970 the proof of existence of this matter was given by Vera Rubin and mates at Carnegie University in Washington. According to this collective they exepted that the velocity of bodies must decreses by going far away from center of galaxy. This fact is the same as Solar system. But inversely they observed that the speed of stars in galaxy are close to each other([4]).By getting far away from center the velocity of stars didn't decrease (B).



After this, they observed other galaxies but the result was the same.We can say that if observed matter is so much, then it was necessary to theese stars exceed from galaxy but it doesn't occur. There must be single expaination of this view. It must be an unvisual matter that can contain all bodies. As we can't observe such a matter it is called dark matter. Dark matter is one of the first parts of existence. Dark matter is a matter which is unvisual,without any relation with electromagnetic waves and which's existence determined by influence on other matters. Dark matter can help us in gravitational problems. We can't see dark matter and dark energy corresponds to it and they contain 95% in nature.We can't understand its form for now.But dark matter affects 3D space. Similarly, it is same as 4d space example as given above. At the same time, if we take into account the existence of gravitational field at 4D space, we can give general opinion that dark matter and energy is present in 4D space and they create gravitational field.Dark matter is a reason of existence of gravitational field. theese reasons create problems for us to learn them as we want.

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