Galaxy Rotation Anomaly

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Abstract

The **galaxy rotation problem** is the discrepancy between the observed rotation speeds of matter in the disk portions of spiral galaxies and the predictions of Newtonian dynamics considering the known mass. However, gravitational time dilation from the outside in allows galaxies and the space they each occupy to rotate as one.

Word list

Galaxy rotation problem, anomaly, matter, Newtonian dynamics, time dilation, spiral galaxy, orbital speed, cold dark matter, relativity, gravity differential,

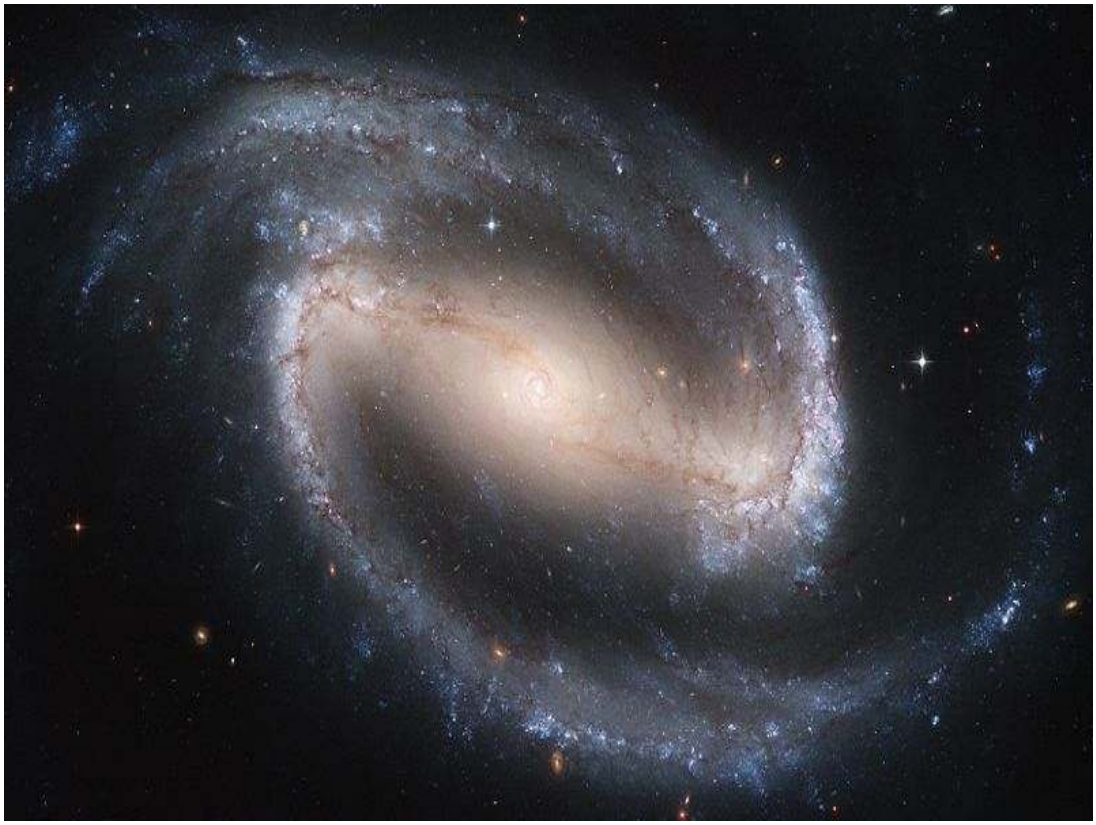

Photo courtesy Hubble, NGC1300

If we could see our galaxy The Milky Way face on then it would probably look a lot like the above. The Milky Way is 100,000 light years across and contains the mass of one trillion times that of the sun (1,000,000,000,000). It contains between two and four hundred billion stars (2 – 400,000, 000,000). It takes the Sun 220 million years to complete a single orbit around the galaxy

"*Stars revolve around the center of galaxies at a constant speed over a large range of distances from the center of the galaxy. Thus, they revolve much faster than would be expected if they were in a free Newtonian potential. The* ***galaxy rotation problem*** *is this discrepancy between the observed rotation speeds of matter in the disk portions of spiral galaxies and the predictions of Newtonian dynamics considering the known mass.*

History and description of the problem

In 1959, Louise Volders demonstrated that spiral galaxy M33 does not spin as expected according to Keplerian dynamics, a result, which was extended to many other spiral galaxies during the seventies. Based on this model, matter (such as stars and gas) in the disk portion of a spiral should orbit the center of the galaxy similar to the way in which planets in the solar system orbit the sun, that is, according to Newtonian mechanics. Based on this, it would be expected that the average orbital speed of an object at a specified distance away from the majority of the mass distribution would decrease inversely with the square root of the radius of the orbit. At the time of the discovery of the discrepancy, it was thought that most of the mass of the galaxy had to be in the galactic

bulge, near the center. The rotation direction is based on how the galaxy was formed. Observations of the rotation curve of spirals, however, do not bear this out. Rather, the curves do not decrease in the expected inverse square root relationship but are "flat" – outside of the central bulge, the speed is nearly a constant. The explanation that requires the least adjustment to the physical laws of the universe is that there is a substantial amount of matter far from the center of the galaxy that is not emitting light in the mass-to-light ratio of the central bulge. This extra mass is proposed by astronomers to be due to dark matter within the galactic halo, the existence of which was first posited by Fritz Zwicky some 40 years earlier in his studies of the masses of galaxy clusters. Presently, there are a large number of pieces of observational evidence that point to the presence of cold dark matter, and its existence is a major feature of the present Lambda-CDM model that describes the cosmology of the universe."

http://en.wikipedia.org/wiki/Galaxy_rotation_curve

Relativity states space tells matter how to move and matter tells space how to warp.

Time dilation is a tiny effect. It is close to zero everywhere except close to massive objects.

Looking at a galaxy face on why do the arms not wind themselves up?

There is a large gravity differential across the galaxy from the center and out into surrounding space. This equates to a large rate of flow of time differential. Time at the center of the galaxy is flowing much slower than near the periphery.

Imagine a spinning disc but substitute the rate of flow of time for speed at any diameter on the disc. The further you get from the center the higher the linear speed (the faster the rate of flow of time). If you rotate a picture of a galaxy, the arms do not wind up because it is not just; the image that is rotating but the medium the image is imbedded upon. Likewise the spiral arms of a galaxy do not wind up in space because space-time is rotating (being dragged) at the same rate as the arms. A rotating object of high mass drags space-time around with it. The centripetal force of a rotating galaxy flattens the disc into the familiar shape. Gravity stops it from flying apart. That same gravity creates a large time differential across the galaxy from the center out. The rate of flow of time decreases from the periphery in.

Conclusion

Gravitational time dilation from the outside in allows galaxies and the space they each occupy to rotate as one.

This seems to be the simpler answer and predicted by General Relativity

See Also:-
Pioneer Anomaly – a Confirmation of Relativity
http://vixra.org/abs/1103.0103

The Discrepancy in Redshift between Associated Galaxies and Quasars
http://vixra.org/abs/1103.0113

The Phoenix Theory of the Universe
http://vixra.org/abs/1103.0102