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 enables galaxies and the space they 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, quasar, white hole, black hole, time reversal, general relativity.

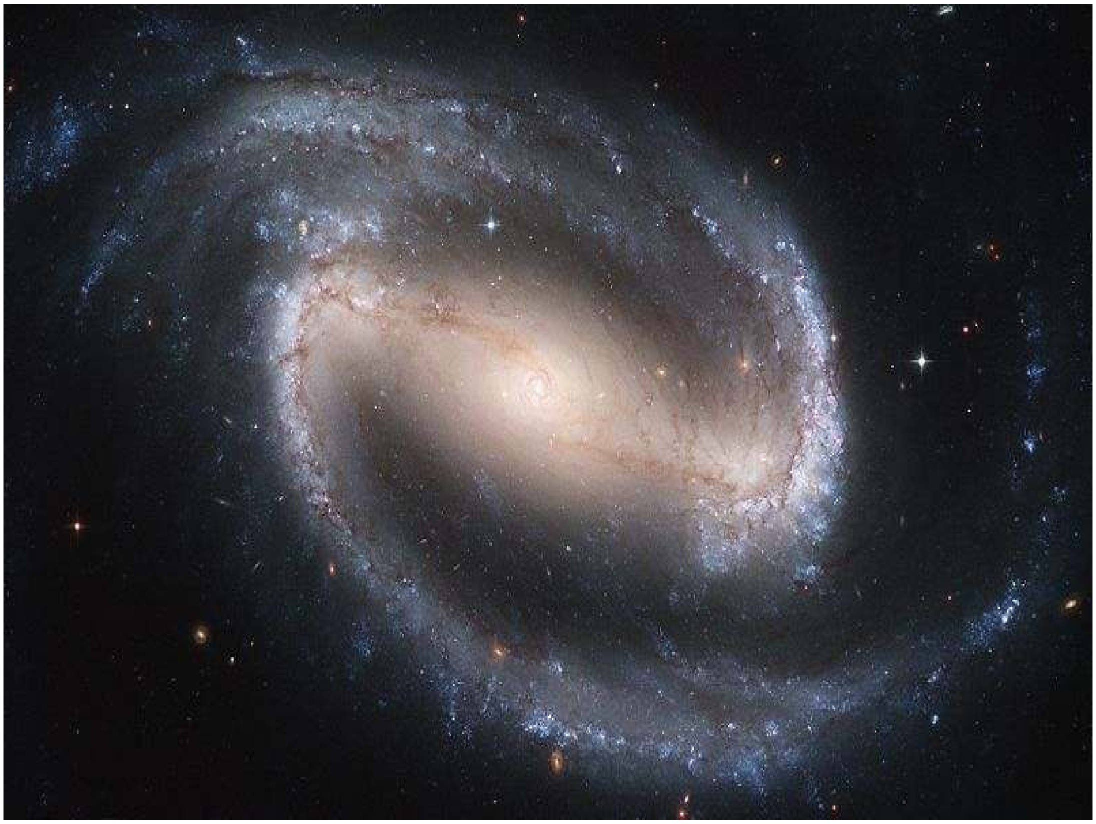

Photo courtesy Hubble, NGC1300

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.

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

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

This effect can be simply explained using existing physics of General Relativity.

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 spiral 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[frame dragging]) 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.

If the galaxy contains a quasar and assuming the quasar to be a white hole, the white hole by trying to reverse time in its vicinity actually slows the rate of flow of time (gravitational time dilation) in its locality, the center of the galaxy. The time differential from the center to the rim will be much more than in a similar galaxy that does not contain a white hole. Therefore, a spiral galaxy containing a white hole will have the arms less wound up than a similar galaxy that does not contain a white hole. [By way of explanation, this theory assumes matter and antimatter to exist in reversed (relative to each other) time frames. Following on from that, this theory maintains that black holes at the end of the last cycle of the universe become white holes at the start of this cycle of the universe.]

Conclusion

Gravitational time dilation from the outside in enables spiral galaxies and the space they 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