Newton and the Galactic Rotation Curve

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SUMMARY.

The galactic rotation curve will not decrease towards the edge of a galaxy, because the nearby masses of stars will cause additional gravity within the galactic plane.

INTRODUCTION.

We know for sure that the earth is orbiting the sun. There is an obvious correlation with the gravity force of the sun.
In 1694 the theologian Richard Bentley embarrassed Isaac Newton by the question: If there is an infinite number of stars in any direction of the universe, how can it be possible that the earth is orbiting the sun and is not bound by gravity on its very place?
Newton's answer: Because of a permanent miracle of God.
The correct physical answer would have been: Because the near mass of the sun has got a stronger force of gravity than the far away masses of all other stars.

GRAVITY OF A NEAR MASS.

Let's make an imaginary simulation. We assume we could take the tenth part of the sun's mass and place it upon the connection line between sun and earth, and now we regard the gravitational effect.
The gravity of 1/10 mass within the sun is, of course, 1/10 of the sun's total gravity.
1/10 mass at half the distance causes 4/10 of total full distance gravity, because of the square rule of gravity. And 1/10 mass at a quarter of the distance causes gravity of 16/10 of the total sun mass in full distance; summed up with the remaining 9/10 mass in full distance, causing 9/10 of gravity force, we get a total gravity force of 25/10 effecting on the earth.
You would get the same result by adding one and a half sun mass (as “missing mass“) into the very sun.
That is: To get a higher gravitational force on a certain orbit you may add some more mass to the centre, or you may split up a certain mass into portions and distribute it like above.
The additional near mass would pull the earth towards the sun. Unless the earth would get a higher velocity. Because velocity is balanced with gravity.
In other words: If there is an additional near mass towards the centre, a certain orbit can only be stable in case the velocity of an object in this orbit is higher than without the additional mass.
That's the reason why the galactic rotation curve will not decrease towards the edge of a galaxy: The masses of stars distributed within the galactic plane will cause more gravity by additional near mass, resulting in more velocity within the galactic plane. And therefore the rotation curve will stay horizontal.

GRAVITATION AT DIFFERENT POSITIONS.

Will the gravity of mass distributed in a spherically symmetrical way be exactly the same as if all mass were concentrated in the very centre of the spherical distribution?
Within a perfect, spherically symmetrical mass distribution, for each mass there is exactly one other mass beyond the symmetrical point at the same radius.
If all spherically symmetrical masses have got the same gravitational effect as the total mass in the very centre – as Newton supposed in his shell theorem -, also each pair of symmetrical masses will have the gravitational effect as if these two masses were concentrated in the very centre of the mass distribution.
According to Newton's gravitation law the gravitational effect is increasing in proportion to the mass and decreasing in proportion to the square of the distance, or mass divided by the square of the radius, or m/r^2 .
Let's regard for example a mass at half the distance to the centre. Because of the square rule of gravity the gravitational effect of this mass will be 4 times the gravitational effect of a mass in the centre. The correspondent mass at the symmetrical point beyond the centre at a distance of 3/2 will exert gravitational effect of 4/9. The sum of the gravitational effects of both masses is 40/9 or 4.44 .
In other words, the gravitational effect of these two masses at their positions will be as great as if 4.44 masses were concentrated in the very centre.
Obviously this result is not identical with the assumption that two symmetrically removed masses must exert the same gravitational effect as two masses in the very centre.
Second example: One mass at the distance of ¼ of the distance to the centre will exert gravitational force of 16, that means the same gravitational force as 16 masses in the distance of the centre will exert upon the position of the observer. The correspondent mass at a position in the distance of 7/4 will exert gravitational force of 16/49 because of the square rule of gravity. Together both masses will exert gravitation of 16 + 16/49, that`s 800/49 or 16.33. The gravitational force of two symmetrical masses at these positions will be as great as if 16.33 masses were united in the very centre.
Obviously also this result is not congruent with Newton's shell theorem.

CONCLUSION.

The sum of all gravitational effects of all masses in a half-globe near the observer and of their corresponding masses in the distant half-globe will result in a **gravitation which is greater than if all masses were concentrated in the very centre**. The reason is the effect of the near masses because of Newton's gravitation law and the square rule of gravity. [1, 2]

DISCUSSION.

With regard to the consideration and calculation above, concerning the shell theorem, any astrophysical expert who doesn`t mean any harm will give the good advice: If you can't imagine a scientific result such as the shell theorem, you just must believe in formulas, because formulas are much better than common sense!
Well, one may trust in the formula 1 + 2 * 3 = 7 . And the result of 7 will always be true. Unless, at certain circumstances, the formula should be (1 + 2) * 3 and the result will be 9 .
Any expert of formulas will defend the correctness of the first formula and perhaps will not recognize the fault, until an expert of reality will solve it.
Such is the fault of the centre-referred theories. Obviously and unfurtunately current astrophysics do

start out from centre-referred theories and formulas like Newton's shell theorem, Poisson's equation and Gauss's law. These theories result in too less gravity, therefore additional “dark matter“ is supposed to be needed as “missing mass“. [3, 4]
But the horizontal galactic rotation curves may be better described by position-referred calculations, by the so-called method of gravity areas, without any dark matter or other unknown. On the basis of the method of gravity areas it must be taken into account that each mass exerts gravity according to its real position. The method of gravity areas is based on Newton's gravitation law, but to some extent it is contrary to his shell theorem. [5, 6]

Satellite experiments like GRAIL 2012 do not bear out the centre-referred assumption, in contrary one may arrive at the conviction that GRAIL disproved the centre-referred theories. [7, 8, 9]

Someone who believes in Newton being infallible and always right, and who believes that a formally correct formula will always produce the correct result applicable to reality, will hardly agree to the consideration above.

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