

# Dark matter: disproved by GRAIL

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## INTRODUCTION. THEORY.

It is a well-known fact, deriving from Kepler's second law of planetary motion, that the velocity of an orbiting object will decrease by increasing distance from the gravitational centre. This law was confirmed again and again for any two bodies orbiting each other such as planets orbiting the sun or artificial satellites orbiting earth.

There is a general accepted agreement to use Kepler's second law also on behalf of rather symmetrically distributed objects such as spiral galaxies or near globes. The geometric centre is supposed to be also the gravitational centre. Local gravity within the galactical disk is usually calculated by centre referred methods such as potential theories, Poisson Equation, Gauß Law. Postulating the total mass being concentrated in the geometric centre, the galactical rotation curve of velocity should be decreasing like a Kepler curve. But observations show a rather horizontal curve. Therefore additional gravity by additional non-visible dark matter seems to be required. [1] Regarding the moon this signifies: The certain amount of a globe's mass exerts gravitationally on a nearby mass at a constant radius by one certain and constant amount of gravity (Shell Theorem).

(As the centre referred methods should be valid for the not really homogeneous and not spherically symmetrical mass distribution of spiral galaxies, they should also be valid for the spherical moon.)

Unfortunately computer simulations on the basis of Dark Matter Theory are not exactly compatible with the observations of galactical rotation curve. [2]

And all attempts to find dark matter by various giant and expensive experiments failed to prove the theory.

## GRAIL. EXACT RESULTS.

The GRAIL satellite experiments (2012) measured the gravity of the moon, orbiting at a height of about 40 km above the moon's surface. That's about 1/30 of the distance to the geometric centre of the moon.

The centre referred theories predicted that the total mass of a globe (the moon) will gravitationally exert on a nearby point (that's GRAIL satellite) as if all of the globe's mass were concentrated at it's geometric centre. But the satellite measured the gravity of surface structures of the moon such as mountains, and did not measure one constant amount of total mass gravity. [3,4]

This result is completely according to Newton's gravitation law, so it is not at all surprising, on the one hand.

On the other hand the centre referred methods should be valid on behalf of the spherical mass of the moon, but they are not compatible with these observations.

In comparison with GRAIL's relative centre distance of 1/30 we can establish on behalf of the sun's relative distance to the galactical centre that there are about 20 sun masses within a distance of less than 1/1,000 (20 light years), and more than one million of sun masses within the distance of 1/30 towards the centre (870 ly). All these masses exert on the sun according to Newton's gravitation law.

## **CONCLUSION.**

It is evident that GRAIL satellites did not at all measure the moon's total mass gravity as if all of it's mass were concentrated at it's centre.

This is scientifically called a disprovement.

Disproving the centre referred theory on behalf of the moon, GRAIL also disproved the centre referred Dark Matter Theory on behalf of galaxies.

[5,6]

## **REFERENCES:**

[1] Weijmans A.-M. et al 2008 MNRAS p. 1343

[2] Walter F. et al 2008 in Jahresbericht 2007, Max-Planck-Institute for Astronomy Heidelberg p. 57

[3] Zuber M. et al. 2013 Science pp. 668-671

[4] [www.NASA/JPL-Caltech/MIT/GSFC](http://www.NASA/JPL-Caltech/MIT/GSFC)

[5] Westenberger W.: Newton und GRAIL  
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[6] Westenberger W.: Dark matter: Geometric Gravitation Theorem  
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