Anomalies in Gravity

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Abstract

Anomalies in gravity are discussed, and methods for detection of such anomalies are suggested.

Background

During solar eclipses unexplained behaviors in pendulums have been reported, primarily by Allais. Therefore, experiments with very sensitive gravimeters have been done. In 1997 such an observation was made in Mohe in China. [1] The eclipse was observed in a low elevation angle, and indicated no effect at the total eclipse, but instead, a not expected effect before and after the moment when the eclipse was observed as total. An attempt to explain the effect, based on the corona of the Sun seems unrealistic, since the effect is mostly outside the corona, and a very large mass in the corona should be needed.

An observation of horizontal motion in a 300 m high radio tower has been reported from Hungaria. [2] Effects outside the eclipse were observed in this test also. The test was done in a low elevation angle.

In 2017 a test with a gravimeter was done in USA during an eclipse taking place in a high elevation angle. No anomaly was observed in that test.

Theory

An explanation to the anomalies in gravity is possible by means of a shielding effect. Such an effect can be regarded as plausible, if we assume the 300-year-old model for gravity, suggested by Fatio. He explained gravity by a flow of small and fast ether particles. These particles were assumed to move in all directions. When these particles are moving inside matter, a very small part of them is absorbed by this matter. So, we find that near a large body, the flow in direction from the body is reduced a small amount in relation to the flow in opposite direction. Since the flow is reduced exponentially, a very small reduction in the gravity from the Sun plus Moon system can be expected during a solar eclipse. The reason to this is the non-linearity. The effect is very roughly estimated to be just large enough to be detectable in an advanced gravimeter.

The negative result in USA in 2017 has been assumed to disprove the existence of anomalies in gravity. However, there is an important error in this conclusion, since our planet is in a free fall in relation to the Sun-plus-Moon system. Therefore, the gravimeter detects gravity from Earth only, and the contribution from the Sun-plus-Moon system is irrelevant. This irrelevance is caused by the principle of equivalence, stating that gravity contribution from the Sun-plus-Moon system is hidden by the motion of our planet. So, we find that the Moon is producing a gravity shadow in the gravity from the Sun. Therefore, a shadow of the size of about the Moon is penetrating our planet. This shadow has cylindrical form, and matter inside this shadow is moved by this effect to be positioned a small amount further away from the Sun-plus-Moon system, in relation to the rest of our planet. The magnitude of this motion can perhaps be in the order of 1 m.

Observations

The interpretations above explain the negative result in 2017. We can not expect a force at the center of the eclipse, but rather a motion just outside the eclipse. This motion can perhaps be observable, since there is a gradient in the motion, and therefore the motion in a test mass can differ in relation to the foundation for the test mass. The reason is that the later value can be regarded as an averaged effect over some part of our planet. In the test mass we have instead a real point value. These ideas have earlier been reported to CNPS under the title *The Wang Eclipse*, where it also was demonstrated that the Wang results are partly outside the corona of the Sun.

The fact that we must look for motion instead of force means also that it can be more interesting to observe in lower observations angles than in larger. This seems to explain the results from China in 1997. The gravimeter detects force by means of motion, and perhaps also horizontal motion. The results from Hungaria were also gained from observations in a low angle, and horizontal motions were detected.

Summary

- We should look for motions just outside the eclipse, and not for forces at the center of the eclipse.
- We should observe at lower observations angles also, and partial eclipses are of interest also.
- We should use a very long pendulum, instead of a gravimeter, and this pendulum should be at rest. If the pendulum is at rest evaluation becomes much easier.

Conclusion

Advancements in science demand sensitivity to anomalies such as are observed in gravity and in Pioneer anomaly. [3]. Anomalies indicate necessary changes. Expensive tests at LIGO and CERN only indicate a possibility for new ideas.

References

1. Q.-S. Wang, *Physics Review D* **62** (2000).
2. Janos Rohan (1961)
3. J.-E. Persson, Pioneer Anomaly and the Ether Wind, URL: http://gsjournal.net/Science-Journals/Research%20Papers-Cosmology/Download/5093