Space curvature on the labdesk

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Based on an idea of the Vixra author Hans van Kessel, a small modification of our experiment "Einstein and Pound-Rebka in the photocoupler" leads to the unexpected selective generation, measurement and exploration of space curvature.

I. Introduction

Following the Special Theory of Relativity (SRT) of 1905, Einstein wrote "Über den Einfluss der Schwerkraft auf die Ausbreitung des Lichtes" in 1911. There he calculated with Newton, Doppler and SRT the energy change (blue/red shift) and the bending of light rays by gravity.

In 1916 he published the General Theory of Relativity (GRT) and doubled the earlier calculation results by additionally including the curvature of space.

In 1960, the Pound-Rebka experiment confirmed the expected tiny energy change of 10^{-15} in a 23 m tower with gamma rays and advanced technology.

Our paper "Einstein and Pound-Rebka in the Photocoupler [1] is assumed to be known in the following.

There, we were able to electromechanically emulate variable and large gravitations and enormous drop tower heights, and measure the resulting decades higher readings with a cheap photocoupler on the labdesk.

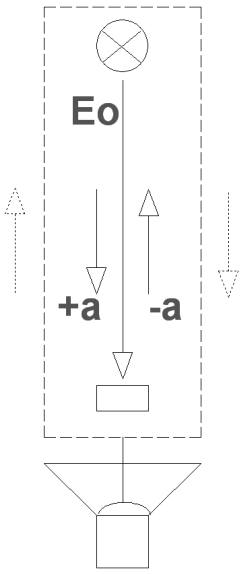
Pound-Rebka and we confirmed the relativistic doubling of the calculation from 1911, because only then measurement and theory match. Thus, the GRT was confirmed.

[1] Grosch, Sturm: Einstein and Pound-Rebka in the Photocoupler, https://vixra.org/abs/2204.0120

II. The vertical experiment

In the following our old experiment is called the "vertical experiment".

The photocoupler is a "minilab" with light source, beam and sensor. If the coupled speaker membrane moves upwards, an acceleration **+a** occurs. And the following move down **-a** creates.



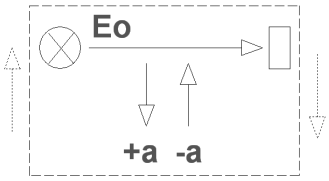
Because of the principle of relativity, the fully enclosed photocoupler responds exclusively to acceleration. The acceleration acts in the direction of the light beam and changes its **Eo** energy. **+a** causes an increase in energy (blue shift) and **-a** reduces the energy again.

It is irrelevant whether one imagines the sensor and the source to be at rest and the photons to be accelerated or whether the light beam is constant and the sensor and the source are accelerated.

It seems to depend only on the relative motion between photons and sensor. One can argue either with Newton, Doppler or SRT.

III. The horizontal experiment

Here, the acceleration acts transversely to the light beam.



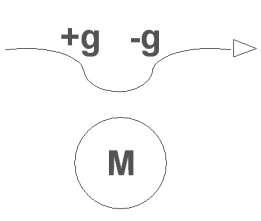
This leads to the fact that the light beam only hits the sensor at different points. No **Eo** change should be measurable. The reality is surprising:

All measured energy changes are exactly half of the vertical experiment.

IV. Discussion

The setup is obviously able to represent only that half of the energy change which cannot be explained by Newton, Doppler or SRT.

If we imagine a mass with gtavitation instead of our artificial acceleration, the light beam would show the following course:



At the transition from **+g** to **-g** the light beam has the highest energy.

With this setup, we thus selectively generate, measure and study the Einstein curvature of space in an unknown direct way.