

# Proposal for Wavelength Meter in Motion to Test the Invariance of $c$

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## 1 Background and Overview

A wavelength meter in motion is proposed to test directly the invariance of  $c$  as postulated by the Special Relativity, which is the first time this experiment is attempted [2]. Until now it was assumed aether, if it was found, was a static substance having a unique reference frame from which entities were traveling through and therefore must not be present if tests proved otherwise.

If we replace aether with graviton fields overlapping each other then we will have a reference frame that follows the rotation of the Earth. Thus to detect its presence, we will have to physically move against that rotating frame in order to detect a change in speed of light.

This is done by sending a laser beam in the same direction of the velocity vector of the moving apparatus, capturing the difference in wavelength as we will later see.

As an initial step, if the experiment is proven to be true then this will turnover a century of misleading theoretical science which consequently involves costly research on dark matter and dark energy as implied by General Relativity to promising research on gravitons as postulated by Finite Theory. The practical use of controlling the latter means levitation, time travel into the future and faster-than-light speed. Thus new science means tremendous economic benefits for the U.S..

## 2 Detailed Project Plan

In Einstein's 1905 paper on Special Relativity, two postulates form the basis of the theory [1]:

1. First postulate (principle of relativity)  
The laws of physics are the same in all inertial frames of reference.
2. Second postulate (invariance of  $c$ )  
The speed of light in free space has the same value  $c$  in all inertial frames of reference.

It was assumed that the latter was already tested because of the Michelson-Morley experiment [4] and other replications favored the null hypothesis.

The aim of this experiment is to search for evidence of a variable speed of light. According to a recent study, it might be possible to predict all phenomena of the universe based on the fact that gravity is a particle. In contrast with the previously assumed static aether from which the bodies are moving through the graviton field will have the same spin of the emitting source. Therefore the failure to detect any movement by the Michelson-Morley experiment can be explained by the fact the reference frame simply had the same spin of the Earth. The reference frame simply follows the source of the strongest gravitational acceleration. This reference frame is the Earth for all low orbit experiments that tested Special Relativity, the Sun for solar system wide probes, and so on.

By sending the laser emitter and wavelength meter at a sufficiently large velocity compared to the inertial frame of Earth we hypothesize that a detectable variance in the speed of light will be seen, only now possible with recent advancements in high-precision metrology [3].

Although gravitons haven't been directly detected and might not even be possible [5], we hypothesize to detect its presence indirectly by observing a variance in both  $c$  and the wavelength of a photon from the graviton field it is traveling through. We reevaluate the absoluteness of the reference frames, henceforth to be referenced to as Finite Theory.

Since gravity obeys the principle of superposition, we will have to isolate which reference frame defines the absoluteness of the kinetic time dilation amplitude via the gravitational acceleration strength:

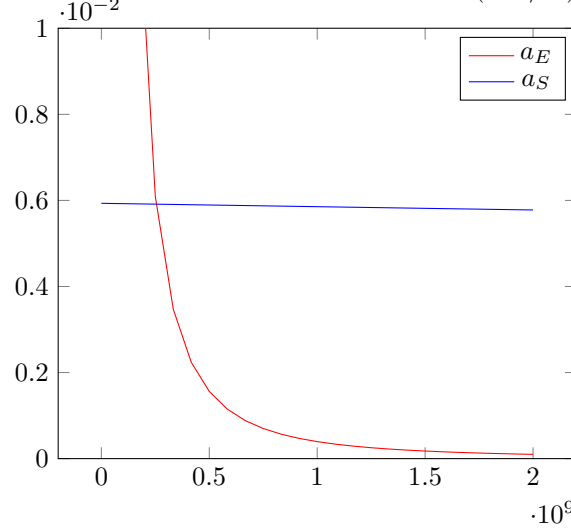
$$a_E = \frac{-Gm}{(x - i)^2}$$

$$a_S = \frac{-Gn}{(x - j)^2}$$

Where:

- $m = 5.9736 \times 10^{24}kg$  (mass of the Earth)
- $n = 1.98892 \times 10^{30}kg$  (mass of the Sun)
- $i = -6371000m$  (position of center of the Earth)
- $j = 1.49597870691 \times 10^{11}m$  (position of the Sun)

Gravitational Acceleration of the Earth and the Sun ( $-m/s^2$ ) vs. Altitude ( $m$ )



Thus the reference frame for altitudes lower than the following is defined by the Earth:

$$x = \frac{(j - i)\sqrt{m} + i - j}{n - m}$$

$$x = 2.5245 \times 10^8 m$$

By sending the experiment at a speed in the vicinity of the speed of sound, it should be sufficient to detect a change wavelength directly proportionally while energy is conserved:

$$E = \frac{h(c - v_1)}{\lambda_1}$$

$$E = \frac{h(c - v_2)}{\lambda_2}$$

$$\lambda_2 = \frac{(c - v_2) \times \lambda_1}{(c - v_1)}$$

$$\lambda_2 = 6.49987 \times 10^{-7} m$$

Where:

- $c = 3 \times 10^8 m/s$
- $v_1 = 0m/s$
- $\lambda_1 = 6.5 \times 10^{-7}m$
- $v_2 = 6125.22m/s$

For a wavelength meter having an accuracy of  $\pm 1.5pm$  we should be able to confirm whether the change in wavelength occurs for the experiment in motion. The predicted difference of  $1.3 \times 10^{-11}m$  ( $\lambda_1 - \lambda_2$ ) is large enough to be detected.

The relevance of having the experiment performed on the International Space Station is the speed relative to the surface of the Earth which elevates to  $7660m/s$ , is more than the minimum required speed of  $6125.22m/s$ .

### 3 Economic Impact of Project Success

Current experiments on dark matter and dark energy costs to the U.S. taxpayers:

The Hobby-Eberly Telescope Dark Energy Experiment of \$8 million +  
The Large Underground Xenon of \$10 million +  
The Dark Energy Survey of \$50 million =  
\$68 million.

The goal of the experiment is to both refute Special Relativity and to confirm Finite Theory. By disproving Special Relativity, all the misleading research on dark matter and dark energy as resulted by General Relativity will be put to a halt and the main focus will therefore shift to research on gravitons.

Once the graviton can be controlled then levitation, time travel into the future and faster-than-light speed will be easily achievable. This will create a new industry, a new engineering field and therefore its economic impact is limitless. It will also secure the U.S. as the leader in science and technology.

### 4 STEM and Educational Outreach Component

N/A

### 5 Estimated Budget and Time Frame

The wavemeter used in the experiment costs around \$35k and the software that will be executed and must still be developed will costs around \$5k. So a total of \$40k will be needed for the apparatus. Also as of today no matching contribution from the principal investigator will be applied.

Given the benefits involved, the sooner the experiment will be performed then the sooner the U.S. economy will be helped.

## 6 Biographical sketch

Phil Bouchard, a University of Sherbrooke graduate, a mathematics scholar and a computer science professional, has worked in commercial software development for companies in Ottawa and San Diego since 2000. He wrote an entire theory from the ground up which aims to disprove General Relativity and he is also the author of a shareware and an Open Source project of high potential:

- [http : //www.finitetheory.com](http://www.finitetheory.com)
- [http : //www.fornux.com](http://www.fornux.com)
- [https : //github.com/philippe8/root\\_ptr](https://github.com/philippe8/root_ptr)

His mathematical background allows him to step into extra curriculum science fields such as astrophysics and his experience in the commercial industry secures his problem solving skills.

Nick Percival graduated from Harvard University with a degree in physics. He became a computer science professional and in the 1960's wrote Checkpoint Restart, which requires total knowledge of the operating system, for all 3 versions of IBM's OS/360 (PCP, MFT, MVT) and later developed large systems for large customers such as John Hancock Life Insurance. After leaving IBM, Nick was the sole developer of TeacherWeb from its inception in 1996 thru 2005. TeacherWeb is a very large online system – when Nick left TeacherWeb, it had 10,000 schools as customers and had been used by over 200,000 teachers who learned about it primarily by word of mouth. Nick's ease of use technology for K-12 teachers who may know little about computers or the internet is patented.

Nick's specialty is Special Relativity with a focus on time dilation (or clock retardation) and empirical data from accelerators, experiments and GPS. See:

- [http : //twinparadox.net/](http://twinparadox.net/)

## 7 Additional Information

N/A

## 8 Acknowledgment

Thanks to Evan Adams for helping editing it and for reviewing related experiments.

## References

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