

A Factor That Comes in Error Which Is Neglected

Pratyush Raj Dulal



Abstract: This research is about a common factor that causes an error in every experiment we perform in laboratories to find out the value of a certain physical quantity. That factor arises when we difference the theoretical value and the experimental value for the same experiment which most probably I have considered as an effect of “something” which is undiscovered till the date. In this paper, there’ll be the inclusion of procedures and observations regarding the birth of that common factor as well as discussion on what might be the cause of that factor from an experimental as well as a theoretical approach. This research paper might unify physics as there is the inclusion of a virtual photon which might have obstructed every experiments one performs. Not only a virtual photon, but it might be any elementary particles or a new elementary particle which hasn’t been discovered till the date. The tentative value of error which comes in the figure of charge of an electron that propelled me to think on virtual photon. By getting raw data of experiments and then differentiating it with respect to theoretical values, we get an error by a slightest of margin. On doing the same procedure for numerous experiments, an error which is multiple of charge of an electron was obtained. Thus, this error is what the research paper is all about. It explains what that error is, why there is an error, and how the error is identified in almost all experiments we perform in laboratories.

Keywords: common factor, error analysis, experimental and theoretical approach, virtual photon

I. INTRODUCTION

This research paper depicts the smallest margin of error which fundamentally gets neglected due to its magnitude. Calculations were performed for different experiments conducted in a laboratory which accounts for a total of 48 calculations. And finally, a common factor in the order of 10^{-19} was found for every experiment. The major objectives of this research include:

- To research on what the factor is,
- To research on the other effects that could be caused by the factor,
- To know about that entity of spectra that transferred its energy in order of 10^{-19} .

Manuscript received on 28 March 2021 | Revised Manuscript received on 06 April 2021 | Manuscript Accepted on 15 April 2021 | Manuscript published on 30 April 2021.

* Correspondence Author

Pratyush Raj Dulal*, Department of Computer Science, St. Xavier's College (Kathmandu), Nepal. Email: pratyushdulal0@gmail.com

© The Authors. Published by Lattice Science Publication (LSP). This is an open access article under the CC-BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

II. METHODS AND OBSERVATION

The study was conducted using primary data. The primary data were obtained from the Oxford Physics Practical Course as these laboratories are considered to develop minimal errors while conducting experiments. Altogether 48 data were obtained for various experiments whose theoretical values could be obtained quite feasibly through high school formulae. [1]

Firstly, the practical value for an experiment was recorded from Oxford Physics Practical Course as:

$$\text{Practical Value} = x \quad (1)$$

The practical value was obtained in this manner. Now, the practical value had to go through many phases to be compared to the theoretical value which we obtain the formula. There was reduction of factors causing changes in room temperature, pressure, humidity, etc. that could cause unwanted turbulence while differentiating with the particular theoretical value. After this procedure, we go on towards calculations.

Then, a theoretical value was obtained by using formulae for that physical quantity at that particular temperature and pressure of experimentation. The theoretical values were calculated very efficiently even considering minutes of physical factors affecting that body including coefficient of viscosity, up thrust from the air, instrumental error, air resistance at that temperature, etc. The coefficient of viscosity was removed by Stoke's Theorem. Similar with the up thrust of air. Instrumental error was analyzed and removed by using simple significant digits tricks. After all these calculations for different experiments, we obtain a theoretical value.

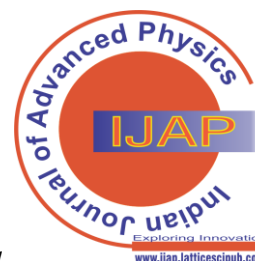
$$\text{Theoretical Value} = y \quad (2)$$

Now doing the actual moduli difference of theoretical and practical values obtained in SI systems, a term was left out. This term left out was a minute term which is considered as error in this research paper. The value of absolute error for the first experiment was obtained in the order of 10^{-19} represented as ‘z.’

$$\text{i.e., } z = |x - y| \quad (3)$$

At first, the value of error was just considered as a random number. I considered it as a probability chance. At the time of first experiment, it was done just for study purpose.

But when I repeated it for a couple more times, error in the same range was obtained.



Experiments on hydrostatics, frictional force, gravity, circular motions and Simple Harmonic Motions were conducted.

The result obtained was always same. Firstly, an error. Secondly, an error which was common amongst all. Then, one experimenting for a total of 48 times, a factor of 10^{-19} was obtained. It had to be related to charge of an electron, or similar entity undiscovered till the date.

Here is an example of one of the 48 experiments that were conducted as publishing all the experiments in this paper isn't pragmatic.

Finding the value of spring constant for a spring

Let us assume a variable "k" for spring constant as:

$$k \text{ (Spring Constant)} = \frac{4\pi}{T^2} \{m_{\text{load}} + 1/3(m_{\text{spring}})\} \quad (4)$$

Equation (4) gives the value of spring constant for a spring when a load is attached on the spring.

Considering the endurance of string, I chose a titanium string to experiment on. Considering Time period, masses of load and titanium string, value of spring constant for titanium string was obtained.

Mathematically,

For titanium string,

Time period (T) = 1.585s (For 1 oscillation)

Mass of load (m_{load}) = 0.091kg

Mass of string (m_{spring}) = 0.0025kg

These were the data for that particular experiment and substituting these values to (4) a theoretical value was obtained:

$y = 1.452265175 \dots$ in SI units

And from the Oxford Practical Physics the practical value was found to be not so far from the theoretical value as: $x = 1.4521$ in SI units [1]

After getting the experimental and practical values, there is the emergence of an error: absolute error which was obtained by putting the values of x and y obtained in Equation (3)

$z = 7 \times 10^{-19}$ (Absolute Error)

From this experiment, the barest of margin was obtained as 7×10^{-19} and a common factor of 10^{-19} was obtained which is the so-called "common factor" in this paper. [1]

Similarly, 48 experiments were done in the similar manner. Some of them had an error of 2×10^{-19} , 119×10^{-19} and so on. A conclusion came up that there is something in the ethereal atmosphere around us. Even after detailed deletion of the factors that might have caused the error, a factor always popped up similar to the charge of a proton/electron. It might have been due to a presence of an elementary particle: known or undiscovered till the date.

III. RESULTS AND DISCUSSIONS

There might be many ideas for what that entity might be that is causing obstruction by a fraction on running these experiments in laboratory. But I do consider it as a new elementary particle. There might be ideas that it may be due to instrumental errors, but the fact that all the experiments were conducted using different instruments denies this argument. Many people may come up with precision error. But the question arises, how come there is same precision error for all 48 experiments conducted.

So, we are only left with a cause that might have influenced all these experiments which I reckon is light. Till

the date light has been quantized to a smaller form called photons which are none other than tiny packets of energy. Photons as well don't have a rest mass and don't possess a charge which we've learned till the date. But, the question arises if photon doesn't possess a tiny fraction of charge then what has caused this error in a minute amount which surprisingly goes on becoming a common factor in the order of the charge of an electron.

It may be too awkward to digest the fact I have come up with in the form of this research paper. It's different than what we've learnt and listening. Photon's mass should be considered in other to remove this factor of error. Again a problem arises, in which quadrant, what is the number of photons. That is still to be identified. If one devises to know the number of photons in a certain quadrant. We can accurately minimize the error.

If this wasn't a common factor, then there was nothing to worry about as it would've been due to instrumental error but what alarmed me was the common factor gained from the error in the order of a charge of an electron.

IV. CONCLUSION

From the above discussion comes some conclusions regarding what that entity might be and are listed as:

- Photon isn't an intermediate particle but can be a lepton which has a feeble charge.
- Photon disintegrates to form an electron when striking on an object.
- Photon possesses repulsive behavior to a slight extent.
- If it's not light creating this obstruction, then it is a different form of radiation possessing an electronic charge in our atmosphere having abundant frequency undetectable to date by modern instruments?

Summing up all the reasoning, the error that could be found from the experiment to find spring constant for a spring is more likely to be an elementary particle: virtual photon or undiscovered till the date. Who knows, if we find the cause of that error, we're one step ahead in unifying Physics.

ACKNOWLEDGMENT

I would like to thank everyone who has been proliferating me till the date: my family members, my colleagues, my teachers. Without them, it would've been very difficult for me to sail through miles and come over here and publish my research work.

Any attempt at this level couldn't have been completed without all of your support. Despite their busy schedule, they've never been down in helping me whenever I needed one.

REFERENCES

1. Oxford Physics Practical Course, Oxford University, Oxford OX1 2JD, United Kingdom. Accessed: (2019, August 27). [Online]. Available: <https://www.teaching.physics.cs.ox.ac.uk/>



AUTHORS PROFILE

Pratyush Raj Dulal, I am from Nepal. I currently live in Kathmandu, the capital city of Nepal. I have just completed my High Schooling from St. Xavier's College in Kathmandu.

I am currently a founding board member of Nepal Computer Science Alliance (NECSA) which proliferates, promotes and facilitates the growing interest and inclination of today's youths in this ever-evolving domain of computers.

As well, I am a Electronics and Computer Science Enthusiasts which has led me to trace my path on a high note. I have won a series of National Awards including but not limited to "Young Scientist Award", "Winner at National Technological Festival", "Winner in Social, Environmental and Technological Exhibition.", etc. It was because of blend of programming knowledge and hardware control technique.

Similarly, I have been involved in research of Physics and Computer Science for a year now. And, this is my first paper on Physics related to errors. I am looking for further collaborations in these field. I have an endeavor to be a part of success in the field of Technology. For that, I've been propelling every second and will propel as well.

I am always looking up for a collaboration in the field of Physics. So, anyone reading this can come up to via my email address for collaborations.

Once again thanks to Indian Journal of Advanced Physics (IJAP) for helping me publish my journal on your timeline.