

INANITAS PHILOSOPHIAE NATURALIS

PH1140 Scientific Skills: Review article of beauty in physics

Farbod Rassouli Sayyed

February 13, 2018

1 pre-Abstract

After many special lectures about physics i wrote about the beauty of the conceptual emptiness of physics.

2 Abstract

Physics has been explained that is not describing the real word that we are supposed to see, and in many ways is trying more to guessing than comprehending from the basements of this universe. Every thing that is surrounding our self, is the universe of the nature wich we can perceive, that is determined by our sense and comprehension of these. Physics, philosophiae naturalis, want describing the behaviour of the nature and understanding how it works. However we are really far to understanding the behaviour of our universe still in now days. And we need to do more, such a new logic or kill this logical cage.

3 Introduction

In this universe where we find our society, where the duty and necessity of each human is to survive and procreate, and in doing this, ensuring the survival and the future of humanity itself, we need to understand and further discover our world. What it is we have done, and what we will do. Science from Latin Scientia means Knowledge [1], the study of the nature and behaviour of the physical universe[1], as this meaning we need to understand how to create this knowledge, and how to prove it. The main problem is on the basement of this castle that we are keeping to build. Where they are from, and how much we understood from it.

4 The emptiness of Physics

The emptiness of physics is derived from many philosophical and scientific problem that we are supposed to answer and work with them. Emptiness because is not based on real and understandable means but axiom and postulates, especially math. We are supposed to understand our universe, living in the same context. But mostly the complex problem is from both maths and physics procedure of constructing knowledge in science, and our perception of reality, where physics is trying to guessing and see if the guess experimentally is true. And all this on the inexistent basis of the logic, behind the postulate of maths.

4.1 Problems in Newton and Quantum theory

The differences between classical physics and the quantum physics, and how the laws are created. Explain us the concept

wrote before, where actually physics is tending to guessing than understanding the basics blocks of this universe. The concept is understood in the process of resolving the problems of classical physics, because they doesn't fit exactly with experiments, where in quantum will be almost resolved[7]. Let's see one example, if we took the classical description of black-body radiation, we have two main equation that describes his behaviour. Wien's distribution law:

$$I(\lambda, T)_W = \frac{2\pi hc^2}{\lambda^5} e^{-\frac{hc}{\lambda kT}} \quad (1)$$

Where is explaining well the long wavelength part of the spectral intensity distribution, but did not do well for shorter wavelengths. Rayleigh-Jeans Law:

$$I(\lambda, T)_{RJ} = \frac{2\pi ckT}{\lambda^4} \quad (2)$$

Where is explaining well the short wavelength part of the spectral intensity distribution, but did not do well for longer wavelengths. This problem was solved by Plank and Einstein. understanding that the radiation is emitted in discrete packets "photons" with energy. So the result was the Plank's law:

$$I_{Pl}(\lambda, T) = \frac{2\pi hc^2}{\lambda^5 (e^{\frac{hc}{\lambda kT}} - 1)} \quad (3)$$

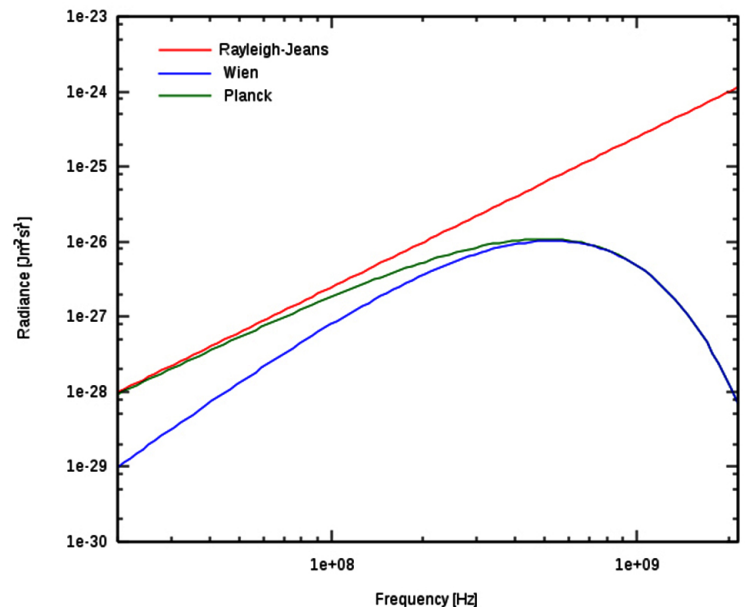


Figure 1: Black-Body radiation, of the 3 laws

Where you can see from the picture 1 the difference between the 2 classical law (red and blue) and the quantum view (green), which the Plank's law is combining the other 2, and resolving the classical description of Black-Body radiation. Now we can understand that physics, without speaking about the logic of maths, is guessing from experimenting the laws, trying to comprehend looking outside the problem, guessing and prove experimentally. Than comprehending the first block of this complex mechanism. There is no explanation how Newton discovered, or maybe more precisely invented, the equation of force in Principia Mathematica[3], but we can affirm now that the simply equation of force:

$$F = ma \quad (4)$$

is not enough precise, especially in contest where we are dealing with speeds near to speed of light. The point is we don't know the truth of behaviour of our universe but we are dealing with approximate law's, tending to build something that have no solid basis, but in the same times trying to make it work, with experimental result. Modifying laws at our pleasure and perception of our universe.

4.2 Problems in Maths

Maths is the skeleton that holds together physics itself, without maths probably there is no space for physics, and other sciences. The study of numbers brings us useful tools, but in the same time the basis of these devices are not founded on logical explanation, but on pretending to assume these are true without any explanation, named postulates[1]. Let's look some postulate in maths of Euclidean geometry, which we are using for physics and pretty much for all science world. The first postulates assume for sure that a point is something which has no part [4], and accepting, understanding that all cartesian plane is formed about something that has no part, something that is not defined, is shocking. As like many others postulated indeed created to let work maths without having doubts, they built this cage of thought. This fact can perfectly pass and gone thru without understanding at all the definition such no dimension and the sense itself of dimension (like point postulate), but the castle that will built on this postulate and the others, where are actually undefined, not well understood. Will be a unstable basis for the castle build on these. However the problem itself is that maths is actually a device created from our mind and its perception. We can assume maths like a code, translated by our thought from the actual reality, that is overlapping with approximation the behaviour of our universe. Where without maths itself it will continue to exist. A proof of logic paradox, is in the true logic behind the complex analysis and numbers, that using an imaginary unit, called "i" where is equal to the root of minus one[5], we solve the equation such as:

$$x^2 + 1 = 0 \quad (5)$$

Where in the real maths logic, every numbers substitute to x will give always a result different from 0, so there is no such a real solution for this equation. On the other hand in maths we define this unit to "solve" such equation, and other impossible equation, using something that is contradicting the logic of maths itself. Because there is no number squared gives us a negative quantity, but we force this definition and we combine 2 logic that they contradict each other. Where the main problem, where confirms maths is not the real absolute language for laws for these postulate and logic, is that the complex number have a correspondence with the experiment and they are used for hydrodynamics and

aerodynamics, the theory of elasticity, electrodynamics and other natural sciences[6]. That confirms the unstable logic of maths where the result give us paradox and problems on understanding this universe.

5 Conclusion

Obviously the argument should be treated better, anyway shows the main point of what I have realised between the special lectures. However, In conclusion our perception and accordingly our universe is the major problem to comprehend the behaviour of this place itself. And how physics fail to approximate the laws of universe, like for logic in maths, we can assert that is more an useful pseudo science than a real science for the all the problem illustrated before. We need something that prescinds from logic itself, something outside from our universe to describe the basics of this big mechanism, something that can't be refuted for his behaviour itself. Obviously I'm not saying that physics and maths are useless, but we need to study these subject to build something stronger and realistic, something that permits us to manipulate our universe. We need to escape from the only thing that we have, this cage, that it begins from our mind. From this unrealistic view of universe, using it itself. So:

The first step to the Nothingness, is Everything we have.

References

- [1] *English Dictionary*. Collins.
- [2] *Physics for scientists and engineers with modern physics..* Giancoli, Douglas C., 2014.
- [3] *Philosophiae Naturalis Principia Mathematica*. Isaac Newton, 1687.
- [4] *the thirteen book of EUCLID'S ELEMENTS* edited by Sir Thomas Heath. Dover, second edition.
- [5] *Theory of functions of a complex variable*. A.I. Markushevich, volume 1, 1965.
- [6] *The Theory of Functions of a Complex Variable*. A.G. Sveshinikov, A.N. Tikhonov, Mir publisher, 1971.
- [7] *A Brief History of Time: From the Big Bang to Black Holes*. Stephen Hawking, Bantam Dell Publishing Group, 1988.