

# **An Atom-Photon Energy Paradox and a de Broglie wave length Energy Paradox of Special Relativity**

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*We discovered a relativistic Photon-Atom-Energy paradox of Special Relativity and a de Broglie wavelengths energy paradox of Special Relativity, which are two different problems, but assumed to be of same reason. Any try to explain using Special or General Relativity failed till now. We invite every one to get involved in our discovery and to try to solve this problems, which seems to be of a very deeply principle. Also we cite our unite solution of both paradoxes.*

## ***Atom-Photon Energy Paradox***

In the Special Relativity Theory we know, that in a moved inertial frame, IF, the mass is relativistically increased by the Lorentz factor  $\gamma$ .

$$m' = \gamma m; \quad (1)$$

And at the other hand it is time dilation in action too and all processes are with a lowered frequency.

$$f' = f / \gamma \quad (2)$$

But an atom that has become more relativistic mass energy as a result emits according to Special Relativity Theory, SRT, a red weakened photon of a lower frequency and energy.

The shell electrons have also become relativistic heavier in the atom and one can expect that too the quantum differences between the electron shells are just as relativistic heavier and consequently should emit blue Doppler shifted photons. If one increase the speed, it will even worse.

A contradiction that waits for discovery and a solution.

## ***De Broglie wave length energy Paradox***

Another energy paradox we discovered by analysing de Broglie wave length.

A De Broglie frequency of matter particles is known [1, 2, 4].

$$f = E / h; \quad \text{from } h \cdot f = E \quad (3)$$

→ Matter frequency grows linearly with relativistic energy, with Lorentz factor  $\gamma$ .

$$E' = E \gamma = mc^2 \gamma = hf \gamma; \quad E' > E; \quad (4)$$

$$m' = m \gamma; \quad m' > m; \quad (5)$$

It is clear that de Broglie frequency is growing with Lorentz factor. Again it is a contradicting paradox and a principle problem as in SRT all processes must get time dilated, which means red shifted.

What is true by experiment?

### ***Experiment wanted***

It will be very interesting to measure the de Broglie frequency of a mass particle in its proportionality of the moving speed. Is it red or blue shifted with increasing the speed and Lorentz factor? According to de Broglie it must be blue shifted and with SRT red shifted. This answer will be in anyway very important one.

This experiment should be threatened with an open result. Even it can be, that there are two different interactions available, one with red and one with blue shift.

On which result the reader wants to place his money? The casino opens.

### ***Solution wanted***

Any one is asked to find a theoretical solution, how to explain both discovered paradoxes. The discovered problem is an independent from a solution discovery and some solutions can be offered for same. It is similar to that situation as 120 years ago wave mechanics failed to explain, why the energy of the wave was growing with frequency while theory told the opposite expected result. There is maybe a very deep change to expect too as it was once the births of quantum mechanics.

We did it already and invite the reader to have an exclusive look at that [5]. This solution extends the SRT and is or can be compatible with it. Our solution unites both paradoxes and this is the reason why we described them both in one article here.

*References:*

- [1] De Broglie, L., Light and Matter, Licht und Materie, H.Coverts Verlag, Hamburg, 1939
- [2] Wikipedia, Matter wave, available at [https://en.wikipedia.org/wiki/Matter\\_wave](https://en.wikipedia.org/wiki/Matter_wave)
- [3] Standard literature on Special Relativity Theory
- [4] De Broglie, L., The reinterpretation of wave mechanics, Foundation of Physics Vol 1 (1), 1970
- [5] Schatz, V., Planck Constant Discovered to be 4-th Relativistic Attribute, preprint available at <https://vixra.org/abs/2106.0031>