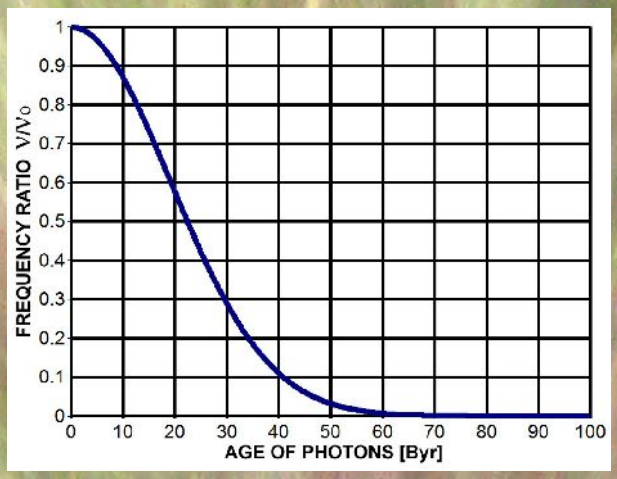
A brief overview of the new order in the Universe

It's great that you think about this stuff

99 years after General Relativity

Law of Aging Photons

by Krunomir Dvorski



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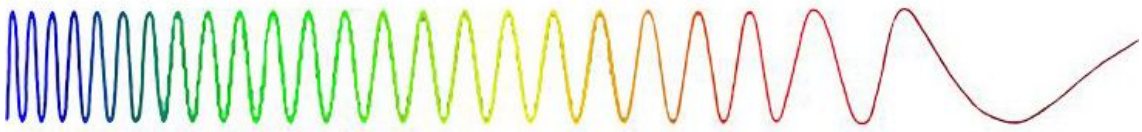


It seems that expanding and accelerating universe is a result of insufficient knowledge about properties of light, and misinterpretation and misuse of Doppler effect. This cognition is changing the cosmology and history of the universe... Oh my, I'm in big trouble.

It is widely known that the photons are gauge boson carriers for electromagnetism. They are a oscillating discrete bundle (packet) of electromagnetic energy. Whenever charged particle react, photons are exchange. They have not mass, no electric charge, no weak charge, no colour charges. Photons are always in motion. They travel with constant velocity through a vacuum at the same speed, speed of light for all observers. Photons are currently best explained by quantum mechanics and wave–particle duality. They show the wave or corpuscular properties. For example, a single photon may be refracted by a lens or show wave interference with itself. Also photons act as a particle having a certain result when its position is measured.

The photon carries spin angular momentum that does not depend on its frequency. The magnitude of its spin is $\sqrt{2}\hbar$ *and the component measured along its direction of motion, its helicity, must be ±ħ. These two possible helicities, called right-handed and left-handed, correspond to the two possible circular polarization states of the photon*...[*Wikipedia] Consequently, there is a quantum entanglement as phenomenon. It is Quantum states of two or more photons, right from the moment of separation. They have to be described with reference to each other although they are separated at a distance from each other.

Photon energy does not depend on its speed. As a discrete pocket of oscillating electromagnetic energy, photon has its own frequency, which determines the energy of photon E = hν. Emitted photons from distant objects lose energy on the way. It is manifested through the decrease of photon frequency. Farther object give us a photons with lower frequency. Furthest objects give us the microwave radiation. Why?

Official scientific world has accepted Big Bang expanding and accelerating universe. Measurements indicate the *Doppler effect,* which is explained with Hubble's law, and dark energy:

Travel is not free. Photons know what is a fatigue and old age. We can measure it.

"*Hubble's law is the name for the observation in physical cosmology that: objects observed in deep space are found to have a Doppler shift interpretable as relative velocity away from the Earth*"...[*Wikipedia]

"*Dark energy is a hypothetical form of energy that permeates all of space and tends to accelerate the expansion of the universe*"... [*Wikipedia]

To say *space expands and accelerate,* means that each pair inertial observers are moving farther apart with accelerating velocity. Is that possible? I apologize to believers of such understanding. It seems that expanding and accelerating universe is a result of insufficient knowledge about properties of light, and misinterpretation and misuse of *Doppler effect*. This cognition is changing the cosmology and history of the universe.

Time of creation emitted photons is short and match with the time-period of photon wave to travel one wavelength ($T = 1/\nu$). The newly kicked photons have an initial energy and direction of motion. It is enough for journey. Some photons collide with matter and lose energy, some deflect or reflect and change direction, and just some leave the *place of origin* and travel through the space at a great distances. The question is, can photon travel to endless space and time? It would be a great privilege.

During a trip photons carry energy from one place to another. It makes the redistribution of energy in space. At the same time measurements suggest that photons are losing energy in their path. Taking energy from photons by expansion of the universe sounds nice but not convincing to me. Which forces can stretch the space? Is it Big Bang and dark energy? Give me a break, I didn't buy it... In the wider sense of thinking, the correct answer is a consequence of existence of a *force of origin***:**

Force of origin resists the removal of energy from place of origin.

In other words, any type of energy must stay close as possible to the place of origin. Leaving this area is accompanied by the *force of origin* which takes away the energy from body which goes.

It is widely known that physics uses frames of reference to represent and measure properties of objects. Frame of reference is usually made up of observers, coordinate systems and clocks. There is something much deeper, it is a *reference*. Generally speaking, r*eference is a relation between objects in which one object designates, or acts as a means by which to connect to or link to, another object...* [*Wikipedia] Any object may be a reference. That *objects* are connected with local objects around. Local objects are connected with macrostructures and with entire universe. Many physicists have neglected the fact that object as *reference objec*t is connected with entire Universe. Universe is a fulcrum for all processes between objects. In such a distribution *force of origin* resists the removal of energy from the *place of origin* as *reference*.

Credit: http://commons.wikimedia.org/wiki/File:TwinsTwins.JPG

Travelling twins and force of origin

Imagine twins in the entire universe, as shown above. If they push each other, they will travel to opposite directions until their kinetic energy is converted to a potential gravitational energy. Without communication twins will remember place and moment of separation and they will dream about reunion. There is a possibility that after all under the influence of gravity twins meet each other. The only place of their meeting is the *place of origin*. Any other solution will cause a change in the integrity of twins. Something similar is happening with photons. The only difference is, photons change their integrity with a loss of energy in time and space.

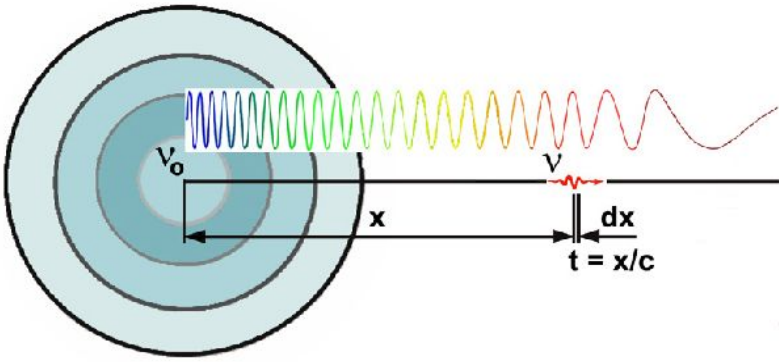
The generated photons are accompanied by the forces of origin that takes energy from photons and does not allow them to leave. Since the speed of light is constant, photons lose energy by reducing frequency. The remaining energy talks about origin and age of photons.

Assume a homogeneous space with a density ρ_o of flat universe. The total mass m of volume V, which was abandoned by the photon, can be calculated (look at the picture):

$$m = \rho_o V = \rho_o \frac{4\pi}{3} x^3 = \frac{4\pi}{3} \rho_o c^3 t^3$$

where is $x = ct$ traveling distance of photon. From energy of photon we can find equivalent mass of photon:

$$h\nu = m_{ph} c^2 \qquad m_{ph} = \frac{h\nu}{c^2}$$



Aging Photons

There is a gravitational force between the mass of the abandoned space and "mass of photon":

$$F = G \frac{m\, m_{ph}}{x^2} = \frac{4\pi G h \rho_o}{3c^2}\, \nu\, x = K \nu x \qquad K = \frac{4\pi G h \rho_o}{3c^2}$$

The forces F on the way dx takes the energy from photon, which is manifested through the decrease of frequency:

$$F dx + h d\nu = 0$$

A simple account with the inclusion of force $F = Kvx$ leads us to the expression for the photon frequency as a function of distance from the *place of origin*:

$$Kvx\, dx = -h d\nu$$

$$-\frac{d\nu}{\nu} = \frac{K}{h} x\, dx$$

Let it integrate from $x = 0$ (frequency of the photonis is ν_o) to $x = x$ (frequency of the photon is ν):

$$-\int_{\nu=\nu_o}^{\nu} \frac{d\nu}{\nu} = \frac{K}{h} \int_{x=0}^{x} x\, dx$$

$$-\ln(\nu)\Big|_{\nu_o}^{\nu} = \frac{K}{2h} x^2 \Big|_0^x$$

Fhoton frequency as a function of distance is:

$$-\ln\frac{\nu}{\nu_o} = \frac{K}{2h} x^2; \qquad \frac{\nu}{\nu_o} = e^{-\frac{K}{2h}x^2}$$

After substitution *x* and *K* with aforementioned expressions, a fhoton frequency as a function of traveling time is:

$$\frac{v}{v_o} = e^{-\frac{Kc^2}{2h}t^2}; \qquad \frac{v}{v_o} = e^{-\frac{2\pi G\rho_o}{3}t^2}$$

or:

$$\frac{v}{v_o} = e^{-\frac{t^2}{2\varsigma^2}} \quad (1) \qquad \varsigma = \sqrt{\frac{3}{4\pi G\rho_o}} = 6.011048\times10^7\, s = 19.04828\, By \quad (2)$$

Where ς is the *photon aging constant* (or *photon dimming constant*). Function (1) is a *Gaussian function* with symmetric "bell curve" shape. The greek small letter ς of *final sigma* looks like standard deviation *σ* from the *probability distribution functions*. I prefer letter ς to σ because it avoid irrelevant assumption.

The figure below shows fhoton frequency as a function of time traveling. After 19 *Byr* (1ς time) frequency of the photons falls to ~ 61% of the initial amount, after 38 *Byr* (2ς time) is 13.5%, and after 95 *Byr* (5ς time) left only ~ 3.7ppm from baseline.

Hydrogen photon (λ_o = 92 nm) must travel more than 100 billion years to wave length of 5.3 cm, which corresponds to the maximum intensity of the cosmic microwave background spectrum measured by the FIRAS instrument on the COBE.

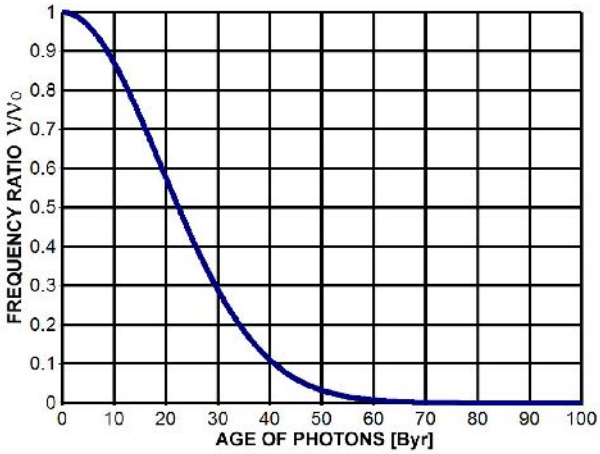


Diagram of Aging Photons (Photon frequency as a function of time traveling) - Hydrogen photon (λo=92 nm) has to travel more then 100 billion years to its wavelength of λ=5.3 cm.

Equation (1) can be written in a form that is called *Law of Aging Photons*:

$$v = v_o e^{-\frac{t^2}{2\varsigma^2}}$$

Multiplying with a Planck's constant, *Law of Aging Photons* can also be given in the form of energy of photon:

$$E_v = E_{v_o} e^{-\frac{t^2}{2\varsigma^2}}$$

On their way from the place of origin in free space, photons get older by a bell-shaped function with the *Photon Aging Constant* ς = 6.011048×10^7*s* = 19.04828 *By.* This process is continuous and there is nothing discreet about it. Only a hard stops of photons show discrete phenomena. The cognition of aging and continuity of photon energy is a turning point between classical and quantum world. The door is ajar for many explanations of the physical world. I think I have reached the level when I can say with great certainty:

It seems that expanding and accelerating universe is a result of insufficient knowledge about properties of light, and misinterpretation and misuse of Doppler effect. This cognition is changing the cosmology and history of the universe.

I know, you are going to argue that I am talking about *gravitational redshift* that makes a shift in the frequency of a photon to lower energy when climbs out of a gravitational field. Also, you are going to argue that my

photons travel in space with no gravity (gravitational field is equal to zero). Such a feeling is the result of perception of a static local objects in the vast space. Consider photon that is kicked out from center of Earth through an imaginary hole. On its path photon loses energy (*gravitational redshift*). We may use the *Law of Aging Photons*. The aging time is much shorter than ς. Let Earth is big enough to take away all energy of a photon. The photon will be shut down and its energy will accumulate in Eart. Energy will not leave the place of origin. If we repeat same experiment with particles that have a mass, on the way particles will lose kinetic energy until they stop. After that, particles will be back in the center of Earth (*place of origin*) and continue their journey to the other side, and so on. Experiment can be repeated from any point in the Eart. If particles does not start in the center of Earth, we will notice asymmetry.

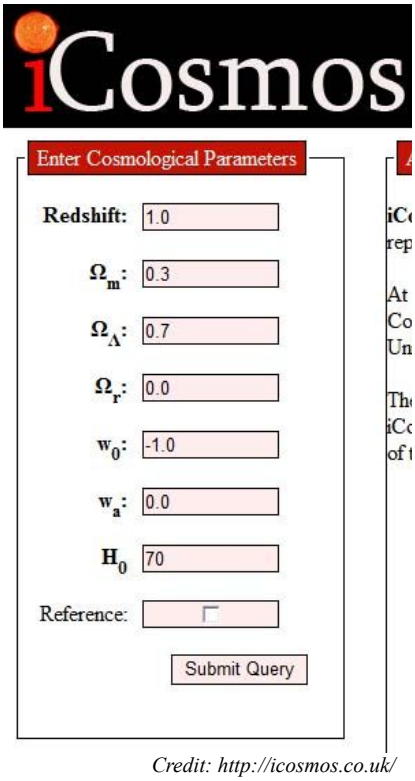
Here is the groundbreaking moment.

Let's put our experiment into the entire universe. I hate to say but universe is widely accepted as a homogeneous and isotropic system. *Each point is the center of the universe*. When a photon goes from the "center of the universe", *force of origin* resists the removal of energy from the *place of origin* as *reference*; So photon loses energy by *Law of Aging Photons.* This is the same as the effect of on photons from the center of Eart.

The light that comes from the depths of the cosmos loses energy required by *Law of Aging Photons*. It is not a matter of cosmic redshift caused by an expansion of space. Expansion of the universe is an illusion. Photon has a right to aging.

Cosmology Calculators and Law of Aging Photons

There are plenty of cosmology calculators that help us in getting a better picture about cosmos. Mihran Vardanyan is the winner of the *OxTalent 2012 IT Innovation Award* (University of Oxford) for his development of the *iCosmos cosmology calculator* which *computes different cosmological quantities and additionally gives graphical representation of the quantities for ... own choice of cosmological parameters...*[*http://icosmos.co.uk/] At the moment *iCosmos cosmology calculator* supports computation of Comoving Distance, Angular Diameter Distance, Luminosity Distance, Comoving Volume, Age of The Universe and Perturbation Growth Factor.

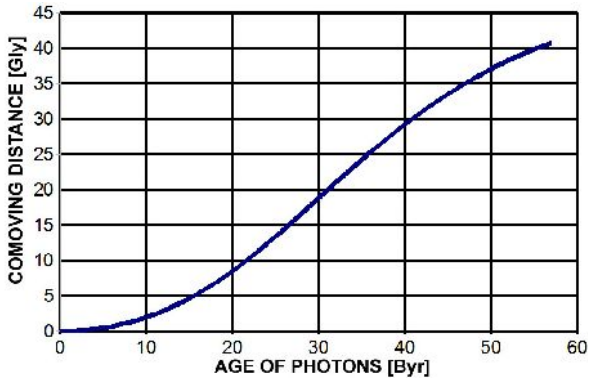


Credit: http://icosmos.co.uk/

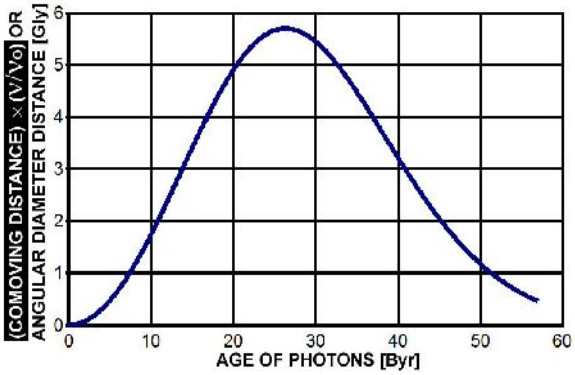
The calculator gives us (*you*) *precise answers for* our (*your*) *choice of cosmological parameters and redshift; iCosmos also generates the plots for the quantities up to redshift 20 so* we (*you*) *can get insight into behavior of the quantities with redshift ...*[*http://icosmos.co.uk/]

With *iCosmos cosmology calculator* I generate plots of Comoving Distance and Angular Diameter Distance as a function of ageing photons (see below). These diagrams are connected with *Diagram of Aging Photons* (look up). The simple multiplication of *Diagram for Comoving Distance* with *Diagram of Aging Photons* gives us a *Diagram for Angular Diameter Distance* (see below).

Why is it important?



Comoving distance



Angular Diameter Distance

This coincidence has occurred due to a wrong interpretation of data. Big Bang theory and expansion of the universe is a fiction. In fact, incoming photons from the depths of space are redshifted by aging photons. Feeling of aging photons was interpreted as a feeling of expansion and aging universe. The edge of the universe was compressed on exponential scale.

References

1. [1]Krunomir Dvorski, A brief overview of the new order in the Universe, The Official Flipping theory Web Site, http://www.science.uwaterloo.ca/~kdvorski/TheFlippingTheoryWebSite/FeedYourMind.html