

Sir Isaac Newton:

Rationem vero harum gravitatis proprietatum ex phænomenis nondum potui *deducere*, & **hypotheses non fingo**. Quicquid enim ex phænomenis non deducitur, *hypothesis* vocanda est; & **hypotheses** seu metaphysicæ, seu physicæ, seu qualitatum occultarum, seu mechanicæ, in *philosophia experimentalis* **locum non habent**. In hac philosophia propositiones deducuntur ex phænomenis, & redduntur generales per *inductionem*.

But the reason for these properties of gravitation have I not yet been able to deduce from phenomena & I do not fabricate assumptions. For whatever has not been deduced from phenomena is called an assumption; & assumptions be they metaphysical, be they physical, be they of hidden qualities, be they mechanical, have no place in observation-based science. In this type of science propositions are deduced from phenomena, & rendered general by induction.

Hypotheses non fingo.

HR: *Neither do I fabricate assumptions. I derive from facts.*

Premise 1 (ascertained truth):

Sir Isaac Newton:

PHILOSOPHIÆ NATURALIS PRINCIPIA MATHEMATICA:

(3rd ed., 1726):

L E X I.

Corpus omne perseverare in statu suo quiescendi vel movendi uniformiter in directum, nisi quatenus illud a viribus impressis cogitur statum suum mutare.

1st LAW:

Each body persists in its state of rest or uniform motion in a straight line, except insofar as it by an impressed force is expected to change its state.

Premise 2 (ascertained truth):

Albert Einstein:

Zur Elektrodynamik bewegter Körper:

Principle of the constancy of the speed of light:

2. Jeder Lichtstrahl bewegt sich im „ruhenden“ Koordinatensystem mit der bestimmten Geschwindigkeit V , unabhängig davon, ob dieser Lichtstrahl von einem ruhenden oder bewegten Körper emittiert ist.

Each ray of light moves in the "stationary" system of coordinates with the determined velocity V , independent of whether this ray is emitted by a body at rest or in motion.

The speed of light is identically the same to each and every observer, independent of any movement of the light source with respect to him.

Both of these premises:

- **Newton's 1st law** (which in fact comes from Galileo Galilei),
"the principle of the constancy of movement of bodies"
- and **Einstein's 2nd postulate**,
the principle of the constancy of the speed of light

are to be considered **ascertained truths**
that were derived from facts of experience.



eterum censeo
superluminalitatem
esse delendam

Furthermore, I consider that
(the concept of)

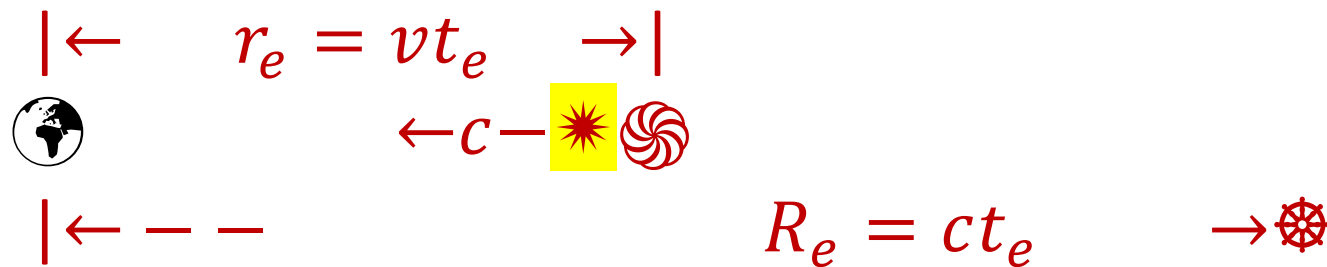
superluminality

is to be destroyed.

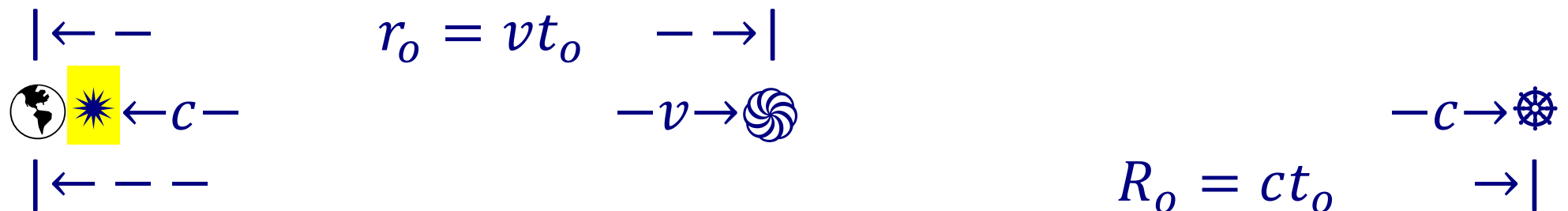
Next is as observed from OUR perspective: a massless entity ☼ at the speed of light (c) and a body 🌀 at a velocity $v < c$ departed simultaneously (at $t = 0$) in the same direction:



At $t = t_e$ 🌀 emits a photon ☼ back to us (**Einstein 2**: at c w.r.t. us):



At $t = t_o$ we observe this photon and in the mean time, both 🌀 and ☼ continued travelling at their respective velocities (**Newton 1**):



Define:

$$\beta = v/c \quad \therefore \beta_{light} = 1$$

$$\tau = t/t_o \quad \therefore \tau_o = t_o/t_o = 1$$

$$\rho = r/R_o \quad \therefore \rho_o = r_o/R_o = \frac{vt_o}{ct_o} = \beta$$

$$\therefore \rho_e = r_e/R_o = \frac{vt_e}{ct_o} = \beta\tau_e$$

Light travel time: $\Delta\tau_l = \rho_e = \text{light travel distance}$

moment of obs.: $\tau_o = \tau_e + \Delta\tau_l = \tau_e + \rho_e = \tau_e + \beta\tau_e = \tau_e(1 + \beta)$

of course: $\tau_e = \tau_o - \Delta\tau_l$ so: $\tau_o = (\tau_o - \Delta\tau_l)(1 + \beta)$

since $\tau_o = 1$: $1 = (1 - \Delta\tau_l)(1 + \beta)$

distribution of $(1 + \beta)$: $1 = (1 + \beta) - \Delta\tau_l(1 + \beta)$

hence: $0 = \beta - \Delta\tau_l(1 + \beta)$

therefore: $\beta = \Delta\tau_l(1 + \beta)$

yielding: $\Delta\tau_l = \frac{\beta}{1+\beta} = \text{lookback time.}$

IF you want to **maintain** the **ascertained truths** **Newton 1** & **Einstein 2**

AND you cannot put your finger on any error in the deduction just shown

THEN you **MUST** accept
$$\Delta\tau_l = \frac{\beta}{1+\beta}$$

as **ONE AND ONLY** correct **lookback time** eqn.

and firmly reject ALL others.

Newton, Reg. Phil. IV.:

Fieri debet ne argumentum inductionis tollatur per hypotheses.

No evidence by induction should be gainsaid by fabrications!

Obviously: $t_o = \mathbf{NOW} = \text{Hubble time: } t_H$
 and: $R_o = c \cdot t_o = \text{Hubble distance: } D_H$
 as well as: $\beta = \text{Hubble velocity: } \beta_H$
 and of course: $\rho_o = \frac{r_o}{R_o \equiv D_H} = \text{curr. proper dist.: } \rho_p$

which renders the **one and only**

correct Hubble-Lemaître law:

Lookback time = light travel time: $\Delta\tau_l = \frac{\beta_H}{1+\beta_H}$

light travel distance: $\rho_l = \frac{\beta_H}{1+\beta_H}$

current proper distance: $\rho_p = \beta_H$

The correctly deduced current proper distance:

$$\rho_p = \beta_H < 1$$

means **not a single object in the entire universe can be farther away than the Hubble distance.**

Diameter of 93 billion light years?



From $\beta_H < 1$ follows: $\Delta\tau_l = \rho_l = \frac{\beta_H}{1+\beta_H} < \frac{1}{2}$

**WE CANNOT EVER LOOK FURTHER BACK IN TIME
THAN HALF THE AGE OF THE UNIVERSE!**

WE DO NOT OBSERVE YOUNG DISTANT OBJECTS;

**THEY WERE AT LEAST HALF THE AGE OF THE UNIVERSE
WHEN THEY EMITTED THE LIGHT WE NOW OBSERVE!**

**AN OBJECT'S CURRENT *PROPER* DISTANCE IS AT MOST
TWICE ITS CURRENTLY *OBSERVED* DISTANCE¹.**

**THE *OBSERVED* DISTANCE OF ANY OBJECT
IS AT MOST HALF THE HUBBLE DISTANCE.**

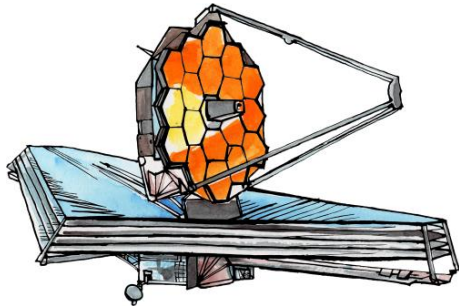
¹ i.e. light travel distance = proper distance at moment of emission of now observed light.

If you stick to **Newton's 1st law**
and **Einstein's 2nd postulate**,
you have **NO OTHER CHOICE:**

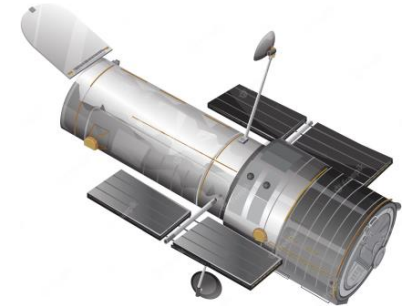
**We cannot look further back in time
than HALF the age of the universe**

**& *current proper* distance is at
most twice the *observed* distance
(& it cannot ever exceed the Hubble distance).**

Very distant objects observed by



JWST or **HST**



or whatever ingenious contraption

are **NOT** a few **100 mln. years old.**

Their observed age is

at least HALF the Hubble time.

Note: this must *of course* include the **CMB**, which **CANNOT** originate from the very beginning².

² See <http://henk-reints.nl/astro/HR-Geometry-of-universe-slideshow.pdf>

It is totally irrelevant if
YOUR  clumsy brain
can grasp it or not!

Isaacus Newtonus:

**Fieri debet ne argumentum inductionis
tollatur per hypotheses.**

**Nothing derived from facts
should be gainsaid by assumptions.**

Maximum observed distance of object A : $\rho_{l,A} < \frac{1}{2}$

same of object B in exact opposite direction: $\rho_{l,B} < \frac{1}{2}$

max. obs. mutual dist. of A & B in our frame: $\rho_{l,AB} = \rho_{l,A} + \rho_{l,B} < 1$

Current proper distance of object A : $\rho_A = \beta_A < 1$

current proper distance of object B : $\rho_B = \beta_B < 1$

mutual pr. dist. of A & B in their pr. frames: $\rho_{AB} = \beta_{AB} = \frac{\beta_A + \beta_B}{1 + \beta_A \beta_B} < 1$

Physical axiomas used: Newton **1** & Einstein **2**;

mathematics used: 7th grade algebra³ & relativistic velocity addition;

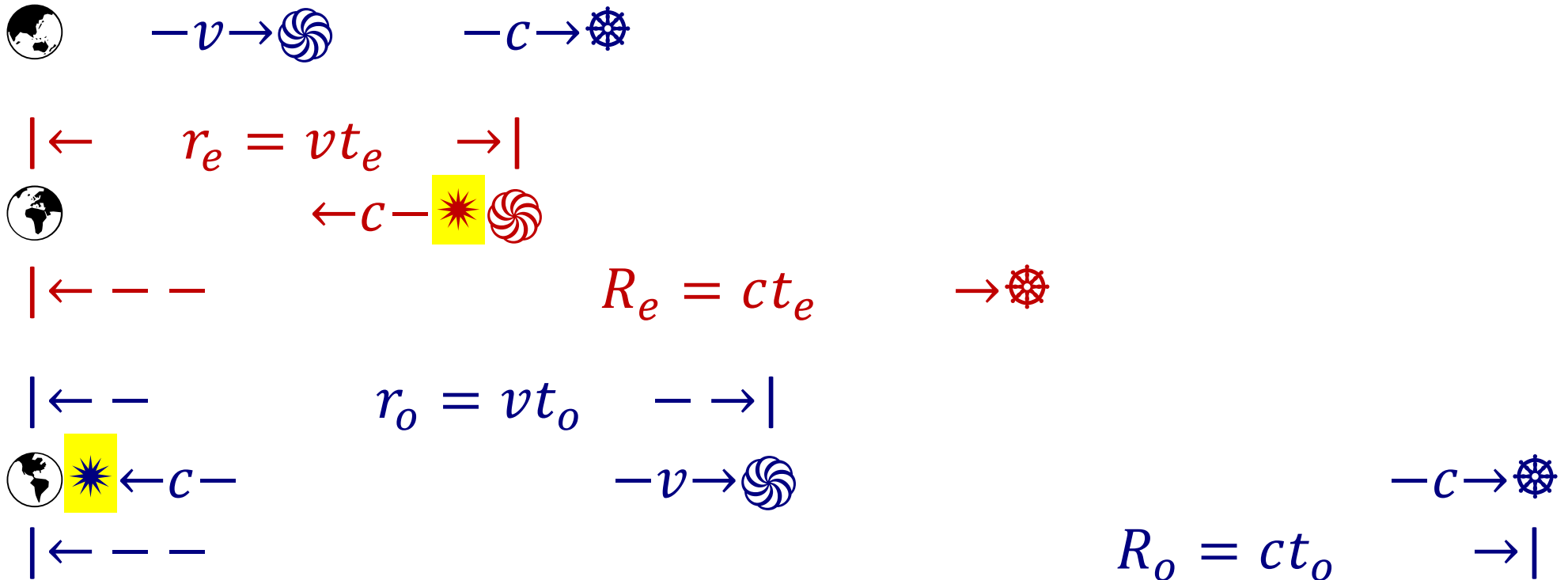
concoctions: none.

³ Dutch: brugklasalgebra

Max. *observed* mutual dist. of *A* & *B* in *our* frame: $\rho_{l,AB} < 1$

max. mutual *proper* dist. of *A* & *B* in *their* pr. frames: $\rho_{AB} < 1$

Admittedly, this was derived from a 🌍🌍🌍-centric scenario:



But of course it applies to **any** location where the **BB** took place!

The **Big Bang** concerned the *entire cosmos* itself;
it presumably started as a zero size entity, so:

No two objects can have an observed nor proper mutual distance exceeding the Hubble distance.

Ergo:

Cosmos is *not* greater than Hubble distance;
there are *no* disconnected parts of the universe,
no unobservable part of it, *no* horizon.

<http://henk-reints.nl/astro/HR-Geometry-of-universe-slideshow.pdf>

⇒ the cosmos definitely is a 3-sphere.

There exists no observational evidence
of anything unobservable.

All of the above has, using proper maths, been deduced from *ascertained truths* only, i.e. observed phenomena & propositions obtained by induction.

**Ex obfervatis phænomenis deductum est
& hypotheses non finxi.**

I challenge you to prove, without any conjecture, assumption, or whatever excogitation, the possibility, the existence, or the necessity of any horizon!

Due verità non possono mai contrariarsi.

Two truths cannot ever contradict one another.

Galileo Galilei, letter to Benedetto Castelli, 21 December 1613.

We will complete the **correct Hubble-Lemaître law**

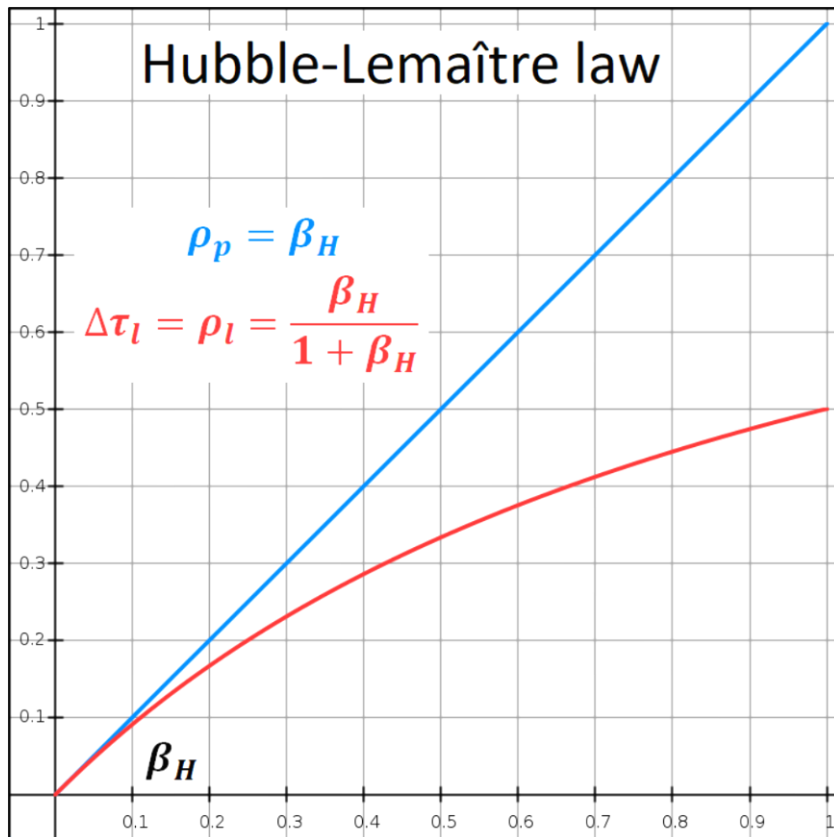
using the **Doppler factor**: $\zeta \equiv z + 1 = \sqrt{\frac{1+\beta}{1-\beta}}$

by which we obtain:

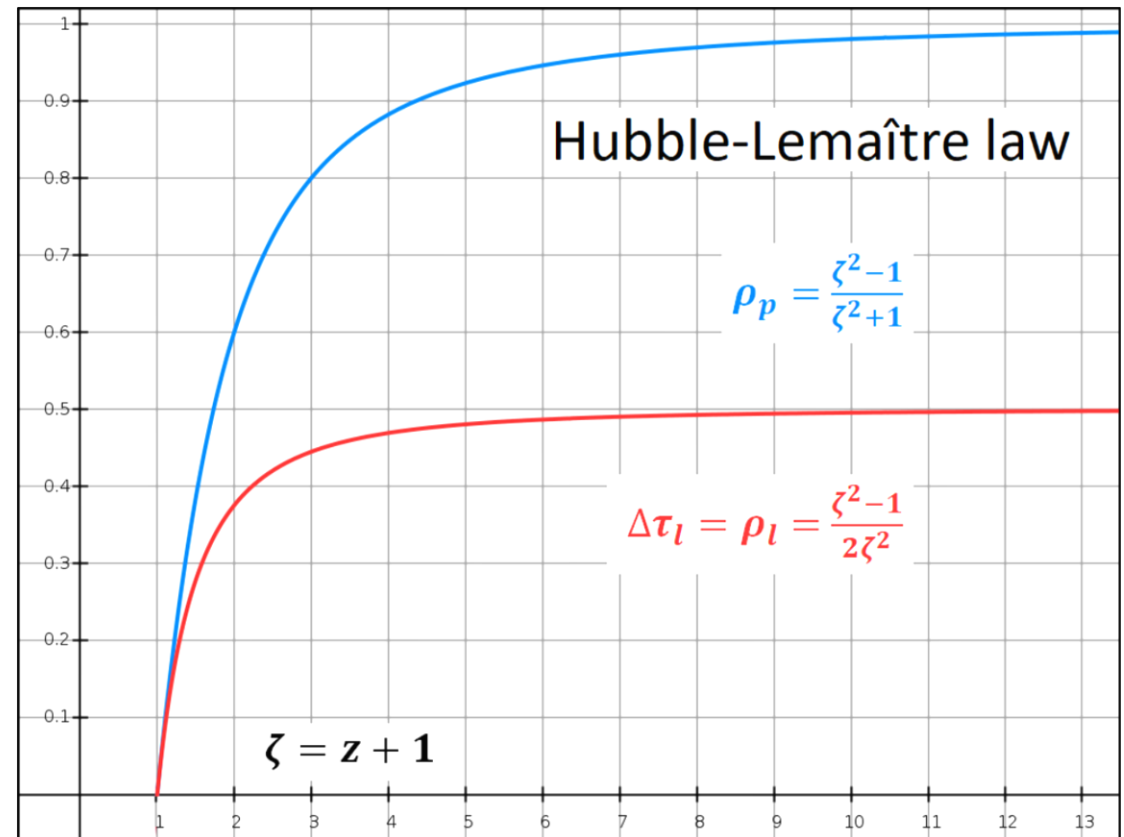
current proper distance: $\rho_p = \beta_H = \frac{\zeta^2 - 1}{\zeta^2 + 1} < 1$

light travel time & distance: $\Delta\tau_l = \rho_l = \frac{\beta_H}{1+\beta_H} = \frac{\zeta^2 - 1}{2\zeta^2} < \frac{1}{2}$

maximum lookback time: $\Delta t_{l,max} = \frac{1}{2} t_H$



by Hubble velocity



by redshift

Current proper distance = where the object resides right now;

light travel distance & time = where the object was
and how it looked like when it emitted what we observe today.

Einstein's 2nd postulate:
speed of light identical to each observer &
independent of any motion of light source;

Einstein's velocity addition theorem:
addition of any $v \neq -c$ to c yields c ;

⇒ only photon itself affects distance
or time yet to travel to ultimate observer
& cosmic expansion definitely cannot!

The latter occurs *behind* the oncoming photon;
photons immediately "belong" to ultimate observer.

Einstein's paper yielding his Nobel prize:

Ann. Phys. 17 (1905): 132-148; dated: 1905-03-17, received: 1905-03-18, published: 1905-06-09

(...) ist bei Ausbreitung eines von einem Punkte ausgehenden Lichtstrahles die Energie nicht kontinuierlich auf größer und größer werdende Räume verteilt, sondern es besteht dieselbe aus einer endlichen Zahl von in Raumpunkten lokalisierten Energiequanten, welche sich bewegen, ohne sich zu teilen und nur als Ganze absorbiert und erzeugt werden können.

(...) when a light ray propagates from a point, the energy is not continuously distributed over an ever increasing volume, but it consists of a finite number of energy quanta, localised in points in space, which move without being divided and which can be absorbed or produced only as a whole.

Photons do NOT change while travelling.

Einstein, Zur Elektrodynamik bewegter Körper:

Ann. Phys. 17 (1905): 891-921;
dated: 1905-06, received: 1905-06-30, published: 1905-09-26

Consistent with

$$E_\gamma = \frac{R\beta v}{N} = h\nu$$

($\beta = \frac{h}{k_B=R/N}$ & $N = N_A$)

3 months earlier in

Ann. Phys. 17 (1905):
132-148; @143.

Dies ist das Doppelpersche Prinzip für beliebige Geschwindigkeiten.
59*

912

A. Einstein.

keiten. Für $\varphi = 0$ nimmt die Gleichung die übersichtliche Form an:

$$v' = v \sqrt{\frac{1 - \frac{v}{V}}{1 + \frac{v}{V}}}$$

914

A. Einstein.

welche Formel für $\varphi = 0$ in die einfachere übergeht:

$$\frac{E'}{E} = \sqrt{\frac{1 - \frac{v}{V}}{1 + \frac{v}{V}}}$$

Es ist bemerkenswert, daß die Energie und die Frequenz eines Lichtkomplexes sich nach demselben Gesetze mit dem Bewegungszustande des Beobachters ändern.

Wavelength is not a property of a photon & definitely not its "size"!

Wavelength is the distance [in the observer's frame] that a photon travels between consecutive occurrences of the same phase, i.e. during one single full oscillation.

$$\text{This distance equals: } \lambda = \frac{c}{\nu} = \frac{ch}{E}$$

Planck: h is a constant of nature;

Einstein: c is a universal constant;

Einstein: E is an immutable energy quantum.

Therefore:

**Neither λ nor ν can change during photon's journey;
i.e. not any redshift can occur while photon propagates.**

A photon travels at the *speed of light*;

⇒ even if it would have any length at all,
it certainly is **Lorentz contracted**
to **nought point nought**;

⇒ it cannot be stretched by whatever factor;

⇒ **not any redshift**
while propagating is possible.

For a photon, the **light travel time & distance**
both equal **nought point nought**;

⇒ in its proper frame, it is an **instantaneous**
energy transfer over zero distance;

⇒ the photon literally has no time to change;

⇒ **not any redshift**
while propagating is possible.

A photon is an immutable energy quantum,
manifesting as an electromagnetic oscillation
at frequency: $\nu = E/h$;

⇒ redshift: $\Delta\lambda \rightarrow \Delta\nu \rightarrow \Delta E$;

⇒ where would this ΔE go to?

⇒ **not any redshift
while propagating is possible.**

Cosmological redshift:

*haphazardly parroted figment of imagination,
not derived from any ascertained truth,
cf. phlogiston.*

Sir Isaac Newton:

Quicquid enim ex phænomenis non deducitur, *hypothesis* vocanda est; & hypotheses seu (...), seu (...), seu (...), seu (...), in *philosophia experimentalis* locum non habent.

For anything not deduced from phenomena is called an *assumption*;
& **assumptions** be they (...), be they (...), be they (...), be they (...),
have no place in observation based science.

Cosmic expansion occurs **BEHIND** oncoming photon.
It merely is the object apparently moving away from us.

WHICH *observed phenomenon*
substantiates **cosmological redshift?**

NAME IT & YOU  WIN!

NOTE: I did not ask what kind of *cock & bull story* could be invented as an "explanation" of the non-phenomenon.

Albert Einstein:

Rein logisch gewonnene Sätze sind
mit Rücksicht auf das Reale völlig leer.

*Propositions obtained by pure logic are
completely empty with regard to reality.*

The *Doppler effect*, based on wave velocity being with respect to the medium only, has been confirmed by

many many many many many

experimental results,

like your own experience if a loud car is passing by.

The Doppler effect is to be considered a truth, by *induction* derived from phenomena.

Newton, Reg. Phil. IV.:

Fieri debet ne argumentum inductionis tollatur per hypotheses!
No evidence by induction should be gainsaid by fabrications! **DAMN!**

Doppler effect

$$\frac{\nu_{\text{obs}}}{\nu_{\text{em}}} = \frac{1}{1 + \beta} \sqrt{1 - \beta^2}$$

results from **difference in local frames** of source & observer and **depends on velocity only, NOT on time or distance; it does NOT occur whilst** light (or sound or whatever **wave**) **is propagating!**

In the observer's frame,
travelling photons cannot & do not change!

Redshift is only a difference in frames!

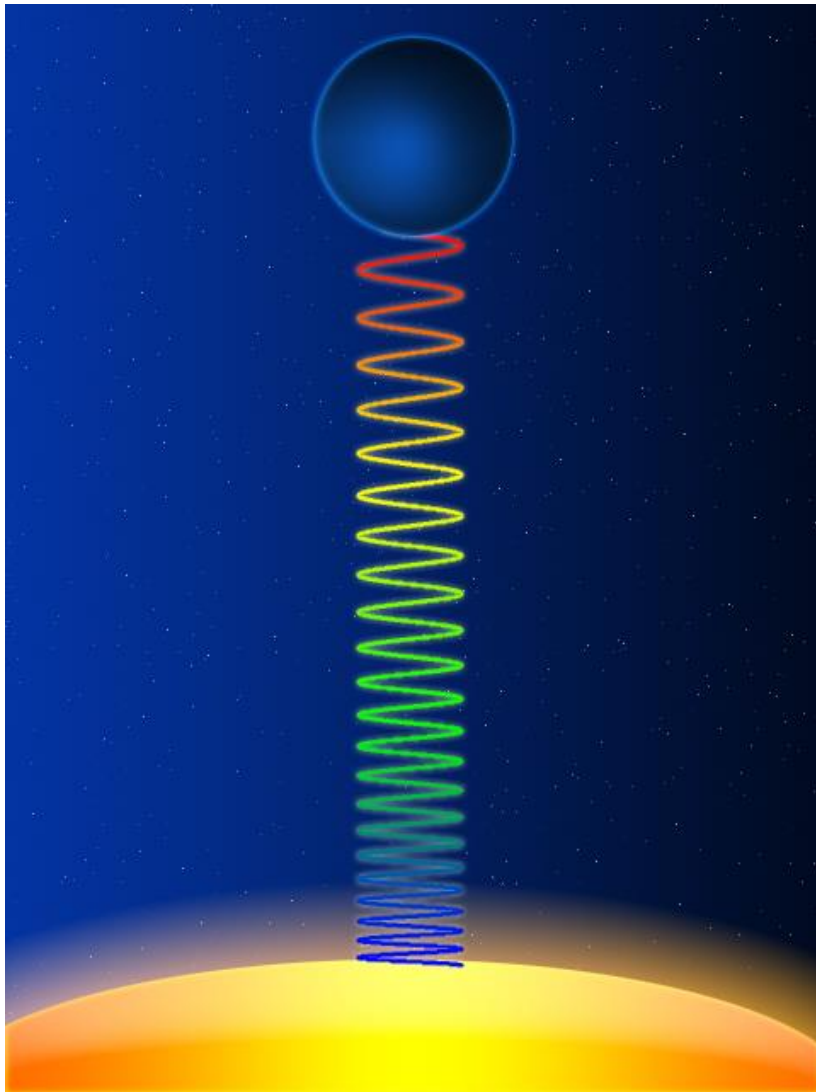
Similar to a honking car: its sound does
not gradually change while propagating.

EVERY stationary⁴ observer hears same higher/lower tone,
INdependent of distance to car or sound travel time!

EVERY comoving observer hears same tone as emitted,
independent of distance to car or sound travel time.

⁴ w.r.t. the air and observing same car's velocity vector w.r.t. himself.

Gravitational redshift



https://en.wikipedia.org/wiki/Gravitational_redshift

**Image is
WRONG!**

In the observer's frame, it has *always* had the ultimately observed frequency \triangleq energy!

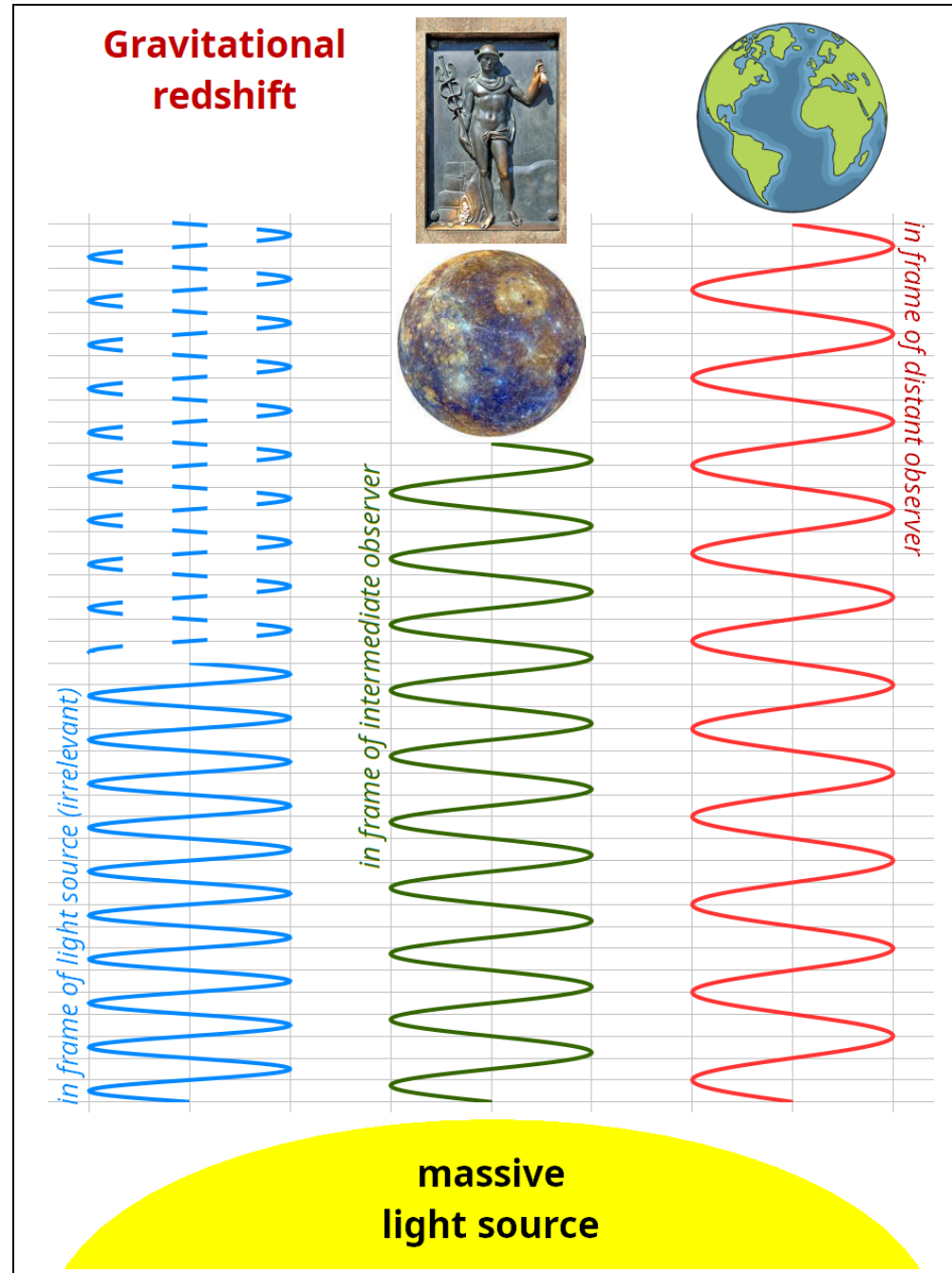
In the emitter's frame, it will *always* keep the originally emitted frequency \triangleq energy!

Photons do *NOT* change whilst propagating!

Wavelength is *NOT* a property of a photon!

REDSHIFT:

just
&
only
a
difference
in
frames!



REDSHIFT:

just
&
only
a
difference
in
frames!

https://en.wikipedia.org/wiki/Chronology_of_the_universe
(as of 2021-11-27 as well as way earlier):

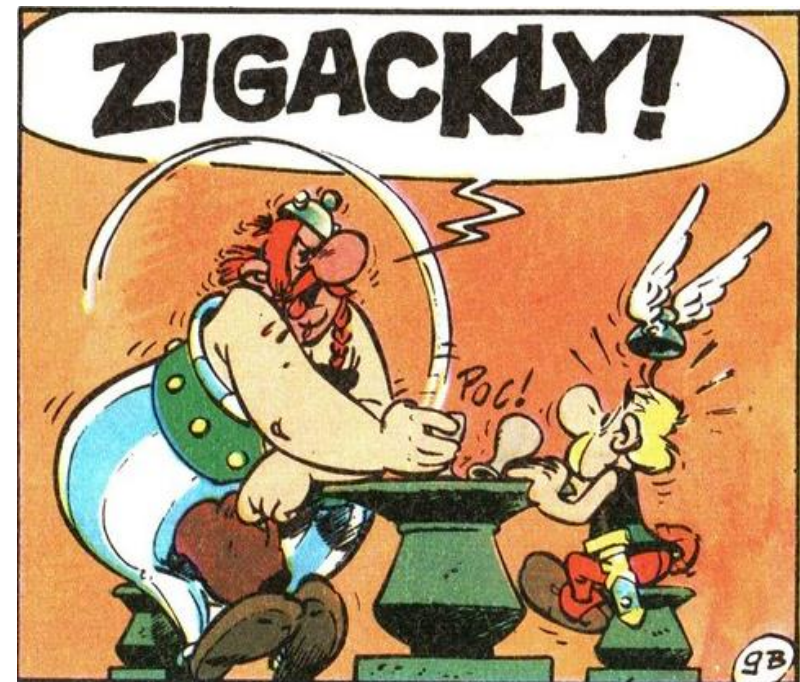
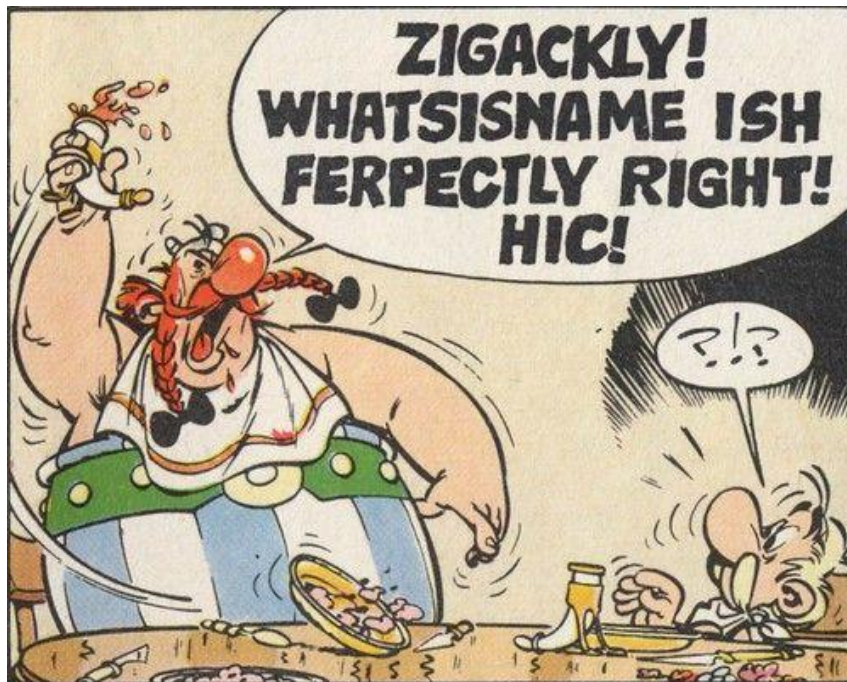
en.wikipedia.org/wiki/Chronology_of_the_universe			
Dark Ages	370 ka ~ 150 Ma? (Only fully ends by about 1 Ga)	1100 ~ 20	4000 K ~ 60 K
<p>The time between recombination and the formation of the first stars. During this time, the only source of photons was hydrogen emitting radio waves at hydrogen line. Freely propagating CMB photons quickly (within about 3 million years) red-shifted to infrared, and the universe was devoid of visible light.</p>			

Bollocks! Flapdoodle! Gobbledygook! Malarkey!



QUOTE: During this time, the only source of photons was hydrogen emitting radio waves at hydrogen line. Freely propagating CMB photons quickly red-shifted to infrared. **UNQUOTE.**

Hydrogen line: $\nu \approx 1.4204$ GHz; $\lambda \approx 21.106$ cm.	CMB(ν): $\nu_{\text{peak}} \approx 160.23$ GHz; CMB(λ): $\lambda_{\text{peak}} \approx 1.063$ mm.	Redshift? Blue!
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It is completely WRONG to integrate over z !

Peebles' behemoth⁵:

$$\rho_l(z) = \int_0^z \frac{dz'}{(1+z')\sqrt{\Omega_r(1+z')^4 + \Omega_m(1+z')^3 + \Omega_k(1+z')^2 + \Omega_\Lambda}}$$

[https://en.wikipedia.org/wiki/Distance_measures_\(cosmology\)#Light-travel_distance](https://en.wikipedia.org/wiki/Distance_measures_(cosmology)#Light-travel_distance) :

$$\Omega_\Lambda = 0.732$$

$$\Omega_m = 0.266$$

$$\Omega_r = 0.266/3454$$

$$\Omega_k = 1 - \Omega_\Lambda - \Omega_r - \Omega_m$$

does not correspond to reality!

Didn't you accept $\Delta\tau_l = \beta/(1 + \beta) = (\zeta^2 - 1)/2\zeta^2$ as the **one and only** correct equation⁶, derived from ascertained truths, thereby implicitly **rejecting** all other **balliterations**⁷?

⁵ 2019 Nobel Prize in Physics ;

see https://ned.ipac.caltech.edu/level5/Sept04/Peebles/Peebles_contents.html and <https://arxiv.org/abs/astro-ph/0207347>.

⁶ See page 8.

⁷ Balderdash, Balls, Baloney, Bilge, Blarney, Blather, Bollocks, Bosh, Bulldust, Bullshit, Bunkum, Bushwa.

Graphical comparison (with apologies for the simple graphics):

z	L: light travel	B: behemoth	P: proper distance	graphical
0	0.000	0.000	0.000	*
0.25	0.180	0.212	0.220	L *
0.5	0.278	0.365	0.385	L BP
0.75	0.337	0.478	0.508	L BP
1	0.375	0.562	0.600	L B P
1.25	0.401	0.627	0.670	L B P
1.5	0.420	0.678	0.724	L B P
1.75	0.434	0.719	0.766	L B P
2	0.444	0.751	0.800	L B P
2.25	0.453	0.778	0.827	L B P
2.5	0.459	0.801	0.849	L B P
2.75	0.464	0.820	0.867	L B P
3	0.469	0.836	0.882	L B P
3.25	0.472	0.849	0.895	L B P
3.5	0.475	0.861	0.906	L B P
3.75	0.478	0.872	0.915	L B P
4	0.480	0.881	0.923	L B P
4.25	0.482	0.889	0.930	L B P
4.5	0.483	0.896	0.936	L B P
4.75	0.485	0.902	0.941	L B P
5	0.486	0.908	0.946	L B P
5.25	0.487	0.913	0.950	L B P
5.5	0.488	0.918	0.954	L B P
5.75	0.489	0.922	0.957	L B P
6	0.490	0.926	0.960	L B P

The behemoth yields a way too large light travel time or distance!

When equating: $\Omega_\Lambda = 0$, $\Omega_m = 1$, $\Omega_r = 0$, $\Omega_k = 0$

z	L: light travel	B: behemoth	P: proper distance	graphical
0	0.000	0.000	0.000	*
0.25	0.180	0.190	0.220	* P
0.5	0.278	0.304	0.385	LB P
0.75	0.337	0.379	0.508	L B P
1	0.375	0.431	0.600	L B P
1.25	0.401	0.469	0.670	L B P
1.5	0.420	0.498	0.724	L B P
1.75	0.434	0.521	0.766	L B P
2	0.444	0.538	0.800	L B P
2.25	0.453	0.553	0.827	L B P
2.5	0.459	0.565	0.849	L B P
2.75	0.464	0.575	0.867	L B P
3	0.469	0.583	0.882	L B P
3.25	0.472	0.591	0.895	L B P
3.5	0.475	0.597	0.906	L B P
3.75	0.478	0.602	0.915	L B P
4	0.480	0.607	0.923	L B P
4.25	0.482	0.611	0.930	L B P
4.5	0.483	0.615	0.936	L B P
4.75	0.485	0.618	0.941	L B P
5	0.486	0.621	0.946	L B P
5.25	0.487	0.624	0.950	L B P
5.5	0.488	0.626	0.954	L B P
5.75	0.489	0.629	0.957	L B P
6	0.490	0.631	0.960	L B P

Even in a matter-only cosmos, the behemoth yields too large values.

<https://arxiv.org/pdf/astro-ph/0207347.pdf>: P. J. E. Peebles & Bharat Ratra:

"The Cosmological Constant and Dark Energy":

$$1 + z = \lambda_{\text{obs}}/\lambda_{\text{em}} = a(t_{\text{obs}})/a(t_{\text{em}}) \quad (7)$$

That's **cosmological redshift**,
 which, like **PHLOGISTON**, has *not* been
derived from *any* ascertained truth!

Einstein:

Rein logisch gewonnene Sätze sind mit Rücksicht auf das Reale völlig leer.
Propositions arrived at by purely logical means
are completely empty as regards reality.

Of course anything built upon it is just as meaningless!

SILLIEST OF ALL:

The **BEHEMOTH** seems to completely ignore **relativistic Doppler redshift** (which **HAS** been derived from truths!)

in favour of **cosmological redshift** (which merely is a brainchild, not derived from *anything!*).

There exists only the relativistic Doppler effect!

Travelling photons **CANNOT & DO NOT CHANGE.**

Redshift is only a difference in frames!

It does ***not*** alter during the propagation of light.

Please see also: <http://henk-reints.nl/astro/HR-diameter-of-universe.pdf>

Isaacus Newtonus:

**Fieri debet ne argumentum inductionis
tollatur per hypothesefes.**

DON'T LET BRAINCHILDREN

PREVAIL OVER

ASCERTAINED TRUTHS!

Ex falso sequitur quod libet.

**Ex fabricationibus sequitur castrum
in cælum, stultorum paradisum.**

https://en.wikipedia.org/wiki/Redshift#Expansion_of_space:

Due to the expansion increasing as distances increase, the distance between two remote galaxies can increase at more than 3×10^8 m/s, but this does not imply that the galaxies move faster than the speed of light at their present location.

YOU



DEDUCE THAT FROM ASCERTAINED TRUTHS & EXPLAIN IT TO A CHILD!

HR: increasing distance \equiv velocity! Cannot exceed c !

"But it 's the metrics themselves!"

Yeah, that's what Einstein derived it for: a moving point (not an object!) in a moving frame for which he shows it cannot exceed c :

§ 5. Additionstheorem der Geschwindigkeiten.

In dem längs der X -Achse des Systems K mit der Geschwindigkeit v bewegten System k bewege sich ein Punkt gemäß den Gleichungen (...)

Proper age of any object

:= its proper time since the big bang.

Cosmological Principle:

Yonder galaxy

measures same Hubble constant
as we do, hence same Hubble time:

Yonder's **NOW** \equiv our **NOW**.

Only one mutual velocity \rightarrow same mutual redshift;
+ same Hubble constant \rightarrow same mutual distance
from both perspectives.

Time dilation:

Rossi-Hall & Frisch-Smith:

Time dilation causes **muons**, coming from the upper atmosphere at $\beta \approx 99.5\%$, to reveal to us, being a stationary observer at low altitude, an **age** that **exceeds** their own **proper lifetime** of $\sim 2.2 \mu\text{s}$ by a factor of $\gamma \approx 10$.

In our time frame, the muon's genesis occurred much longer ago than in its own.

Gramps appears to be a toddler!

In exactly the same way:

Due to Yonder's Hubble velocity, we perceive its proper age dilated to a birth way before the big bang.



Next is only in retrospect, BB was single event as it took place.

From our perspective, we were the very last one to have been expelled by the big bang.

What existed before the big bang?

The entire universe, except us.

The very same is true from the perspective of ANY galaxy...

THE UNIVERSE IS WEIRD.

After emission of a photon, Yonder's proper age keeps growing in its own time frame.

This growth is time dilated to us, yielding the light travel time as perceived by us.

Inverse time dilation thereof yields Yonder's proper age growth since it emitted the now observed light:

$$\Delta\alpha = \frac{\Delta\tau_l}{TDF} = \frac{\beta}{1+\beta} \cdot \frac{1}{TDF}$$

Subtracting this from its
current proper age being the Hubble time
 (which applies to ALL objects)
 yields **Yonder's proper age** when
 it emitted the now observed light:

$$\alpha_e = 1 - \Delta\alpha = 1 - \frac{\Delta\tau_l}{TDF}$$

$$\alpha_e = 1 - \frac{\beta}{1+\beta} \cdot \frac{1}{TDF}$$

**Observed proper age =
 Hubble time minus inversely dilated light travel time.**

OR:

Yonder's dilated age when photon is observed (now):

$$a'_o = TDF \cdot a_o = TDF \cdot t_H$$

Yonder's dilated age when photon was emitted:

$$a'_e = a'_o - \Delta t_l$$

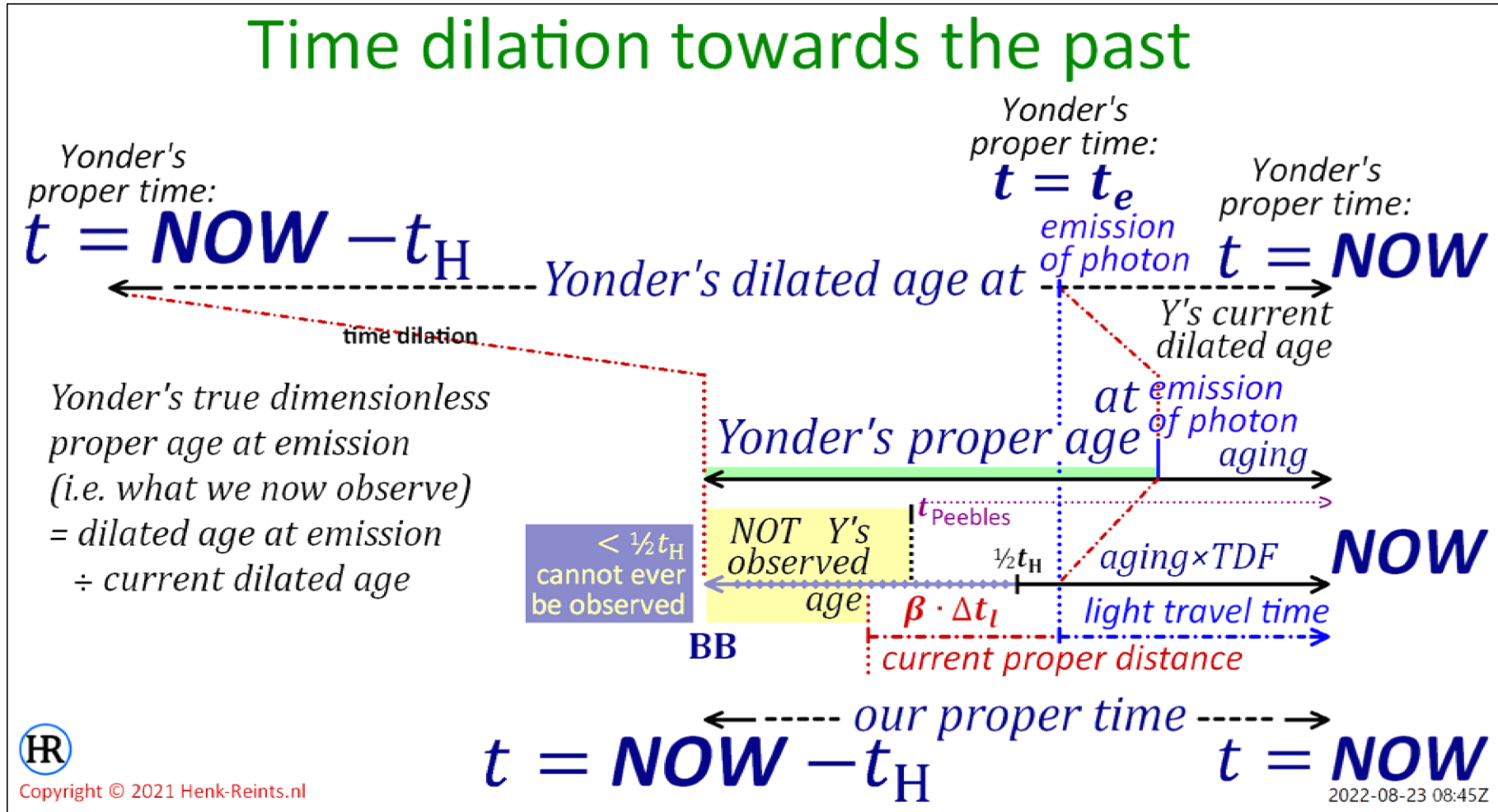
Yonder's dimensionless (proper) age at emission:

$$\alpha_e = \frac{a_e}{t_H} = \frac{a_e}{a_o} = \frac{a'_e}{a'_o} = \frac{a'_o - \Delta t_l}{a'_o} = 1 - \frac{\Delta t_l}{TDF \cdot t_H} = 1 - \frac{\Delta \tau_l}{TDF}$$

$$\alpha_e = 1 - \frac{\beta}{1+\beta} \cdot \frac{1}{TDF}$$

A PICTURE IS WORTH A THOUSAND WORDS

(Henrik Ibsen (1828-1906): A thousand words leave not the same deep impression as does a single deed).



Edsger W. Dijkstra (1930-2002): [EWD1239]:

A picture may be worth a thousand words, a formula is worth a thousand pictures.

Distant object's **proper age** at emission:

Dopplerian:

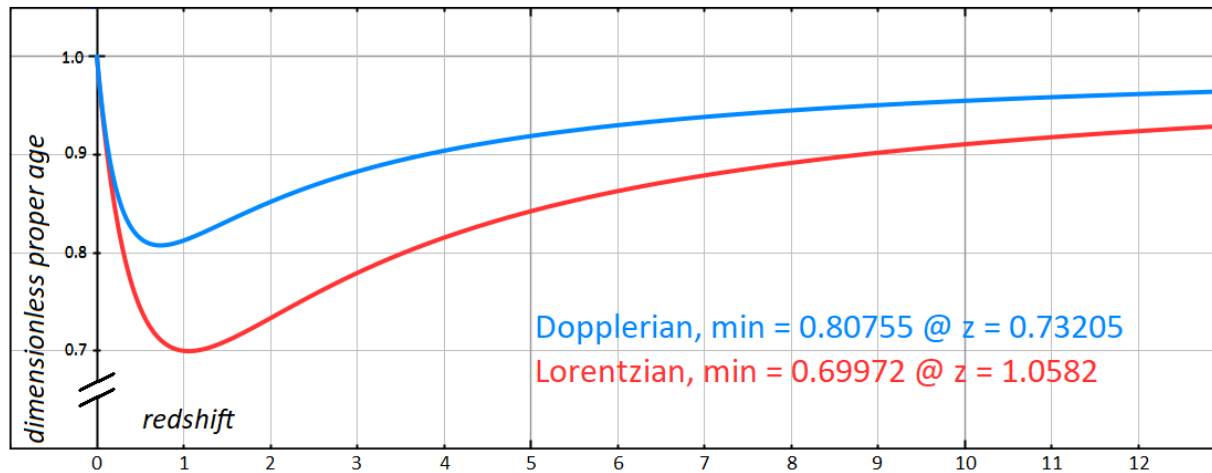
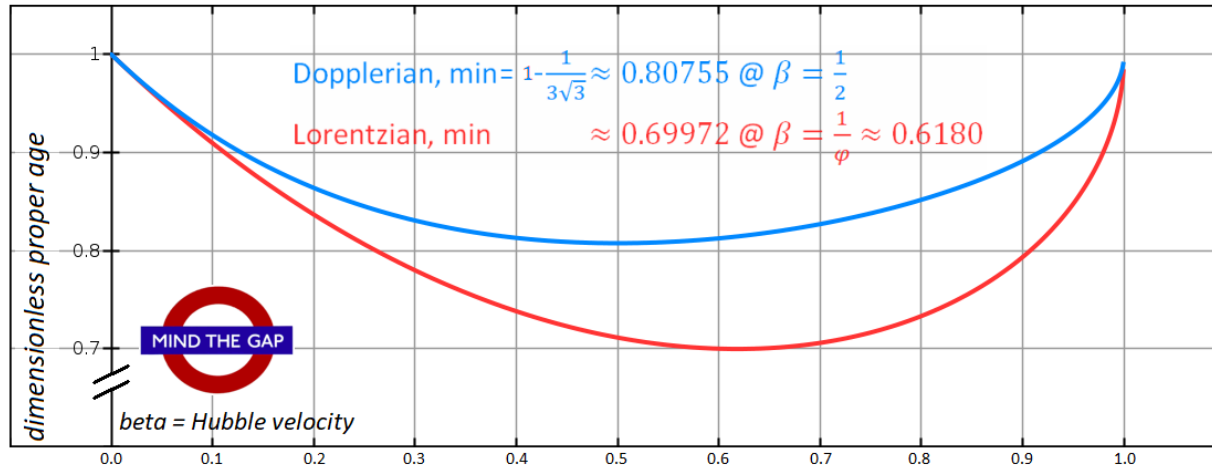
$$\alpha_{e,D} = 1 - \frac{\beta}{1+\beta} / \sqrt{\frac{1+\beta}{1-\beta}} = 1 - \frac{\beta}{1+\beta} \cdot \sqrt{\frac{1-\beta}{1+\beta}} = \mathbf{1} - \frac{\zeta^2 - 1}{2\zeta^3}$$

Lorentzian:

$$\alpha_{e,L} = 1 - \frac{\beta}{1+\beta} / \frac{1}{\sqrt{1-\beta^2}} = 1 - \beta \cdot \sqrt{\frac{1-\beta}{1+\beta}} = \mathbf{1} - \frac{\zeta^2 - 1}{\zeta^3 + \zeta}$$

Distant object's observed proper age $\gg t_H/2$:

Proper age of distant objects
when they emitted the light we now observe



Minimal observed proper age of distant objects:

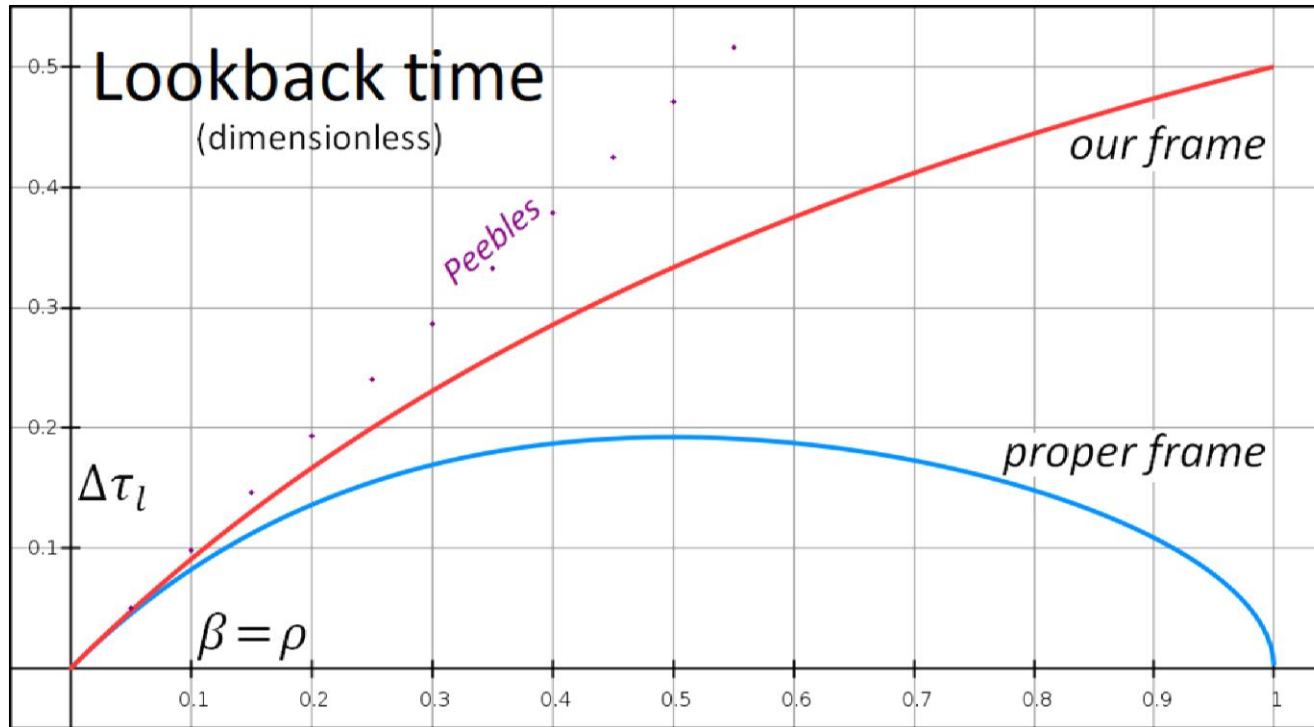
D: $0.8 \cdot t_H$

L: $0.7 \cdot t_H$

Very distant objects have an observed proper age close to the Hubble time!

Observation of young universe is an illusion.

Effect of time dilation due to β_H :



$$\Delta\tau_{l,\text{our}} = \frac{\beta}{1+\beta}$$

$$\Delta\tau_{l,\text{pr}} = \frac{\Delta\tau_{l,\text{our}}}{\zeta} \quad (\text{D})$$

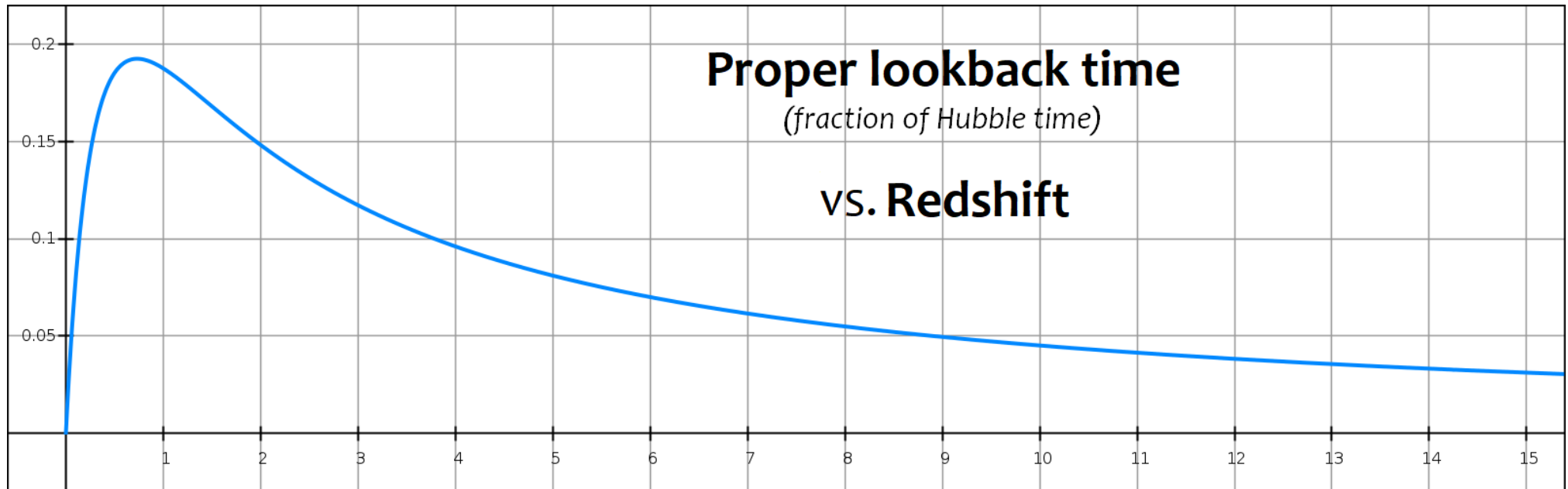
$$= \frac{\beta}{1+\beta} \cdot \sqrt{\frac{1-\beta}{1+\beta}}$$

$$= \frac{\zeta^2 - 1}{2\zeta^3}$$

$$\text{Max. proper lookback} = \frac{1}{3\sqrt{3}} \quad @ \quad \beta = \frac{1}{2}, \quad \zeta = \sqrt{3}, \quad z = \sqrt{3} - 1$$

$$\approx 0.19245 \cdot t_H \quad \approx 2.65 \text{ Ga} \quad @ \quad \frac{1}{2}D_H$$

One and only **correct** (dimensionless) **lookback time**:



$$\Delta\tau_{l,pr} = \frac{\zeta^2 - 1}{2\zeta^3} = \frac{(z+1)^2 - 1}{2(z+1)^3} \quad (\text{cf. Peebles' behemoth}).$$

Online calculator: <http://henk-reints.nl/astro/CosmicDistances/CosmicDistances.html>

Sir Isaac Newton: *Natura enim fimplex est.*

We cannot & do not
look further back than:

$$\frac{t_H}{3\sqrt{3}} \approx 0.19245 \cdot t_H \approx 2.65 \text{ Ga}$$

which corresponds to:

$$z = \sqrt{3} - 1 = 0.73205$$

& **half** the Hubble distance.

Cosmic Microwave Background:

CMB source's current proper age: t_H (= ours).

Emission of now observed CMB **in CMB source's proper time:**

~~Supposed~~ excogitated redshift: $\zeta \approx 1100$:

$\frac{\zeta^2 - 1}{2\zeta^3} t_H \approx 6.26 \times 10^6$ years ago, not more.

Actual CMB redshift (probably)⁸: 1.1×10^9 ,
yielding emission: 6.26 yrs ago.

The CMB tells us *completely nothing*
about the early universe!

⁸ See <http://henk-reints.nl/astro/HR-Geometry-of-universe-slideshow.pdf>

Cosmological Principle \Rightarrow every entity in entire cosmos, including **CMB source** (*whatever that may be*), observes very same Hubble time (t_H) as *we* do.

In *our* time frame, the now observed CMB was emitted $\frac{1}{2}t_H \approx 6.9$ bln. years ago.

In *CMB source's* proper time, it was emitted merely **6.26 years ago** (believe me, $\zeta_{\text{CMB}} \approx 1.1 \times 10^9$), when the thing had a proper age of $t_H - 6.26$ years.

Mutual velocity ($v \rightarrow c$) \Rightarrow *its* **6.26** years are dilated to what *we* consider *light travel time* of **6.9 bln.** years.

See also: <http://henk-reints.nl/astro/HR-Twin-paradox-slides.pdf>

Dutch expression: "**sitting with the baked pears**":
having achieved a complete failure after much effort to obtain something nice, whilst one could have known in advance that it was senseless.

*My dear cosmologists, thanks to relying on **fabrications**, not deduced from ascertained truths, as well as not restricting oneself to assigning only **known truths** as causes of phenomena, together with the severe **blunder** of ignoring time dilation for very fast moving distant objects, all (i.e. **ALL!**) presumed "knowledge" about the distant/early cosmos (e.g. BB, CMB, cosmic dawn, proper age of remote galaxies, you name it) is **JUNK**, good for the waste bin!*

Scientia non est!



ALMA Scientists Uncover the My: x

public.nrao.edu/news/alma-massive-galaxies-running-on-empty/

NSF NRAO National Radio Astronomy Observatory

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For Scientists

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Home > News > News Release: September 22, 2021 at 11:00 am EDT

ALMA Scientists Uncover the Mystery of Early Massive Galaxies Running on Empty

New study reveals that early galaxies have no fuel, and something is stopping them from refilling the tank

<https://public.nrao.edu/news/alma-massive-galaxies-running-on-empty/>

Mystery? Severe misunderstanding!

Proper application of time dilation:
observed proper age of distant objects
approximates the Hubble time.

2022-04-13:

<https://science.ku.dk/english/press/news/2022/breaking-news-from-the-dawn-of-the-universe/>

Breaking news from the dawn of the universe

The newly found object - named **GNz7q** by the team – was born **750 million years after the Big Bang** (...).

Gobblødygook!

Well, maybe it was *born* then, but it's definitely not its now observed age.

Nature (<https://www.nature.com/articles/s41586-022-04454-1>):

A dusty compact object bridging galaxies and quasars at cosmic dawn

(...) an ultraviolet compact object, **GNz7q**, associated with a dust-enshrouded starburst at a **redshift of 7.1899 ± 0.0005** .

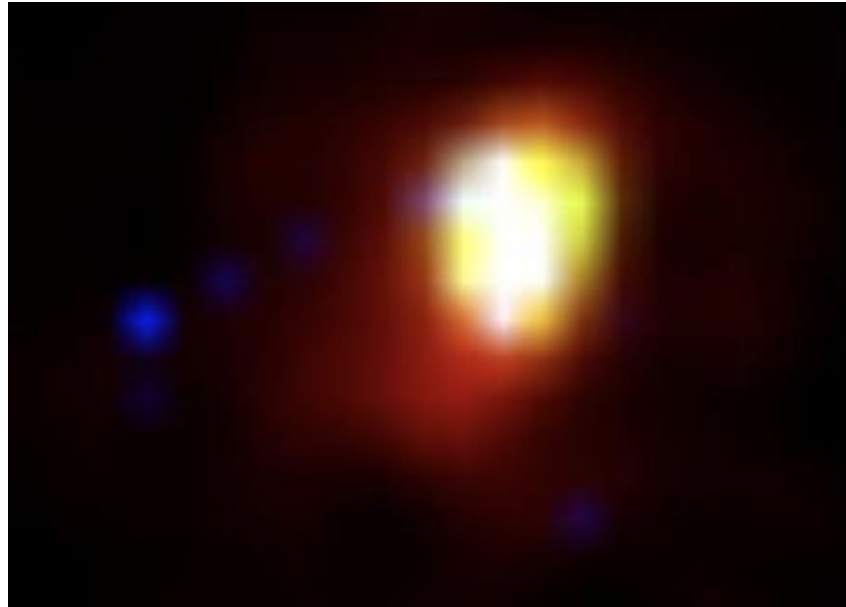
$\zeta = 1 + z = 8.1899$ & using: $t_H = 13.77$ Ga:

proper lookback time: $\Delta\tau_{l,pr} = \frac{\zeta^2 - 1}{2\zeta^3} = 0.06 \triangleq \mathbf{828}$ million years;

observed proper age: $1 - \Delta\tau_{l,pr} \approx 0.94 \triangleq \mathbf{12.94}$ billion years.

2022-08-05: <https://www.ed.ac.uk/news/2022/edinburgh-astronomers-find-most-distant-galaxy>

Edinburgh astronomers find most distant galaxy



A colour image of **CEERS-93316**, a galaxy discovered **35 billion** light-years from Earth.

ROFL, 35 bln. light-years is 2½ times the actual size (age) of the universe, SO WE OBSERVED LIGHT THAT HAS NOT YET HAD TIME TO REACH US!

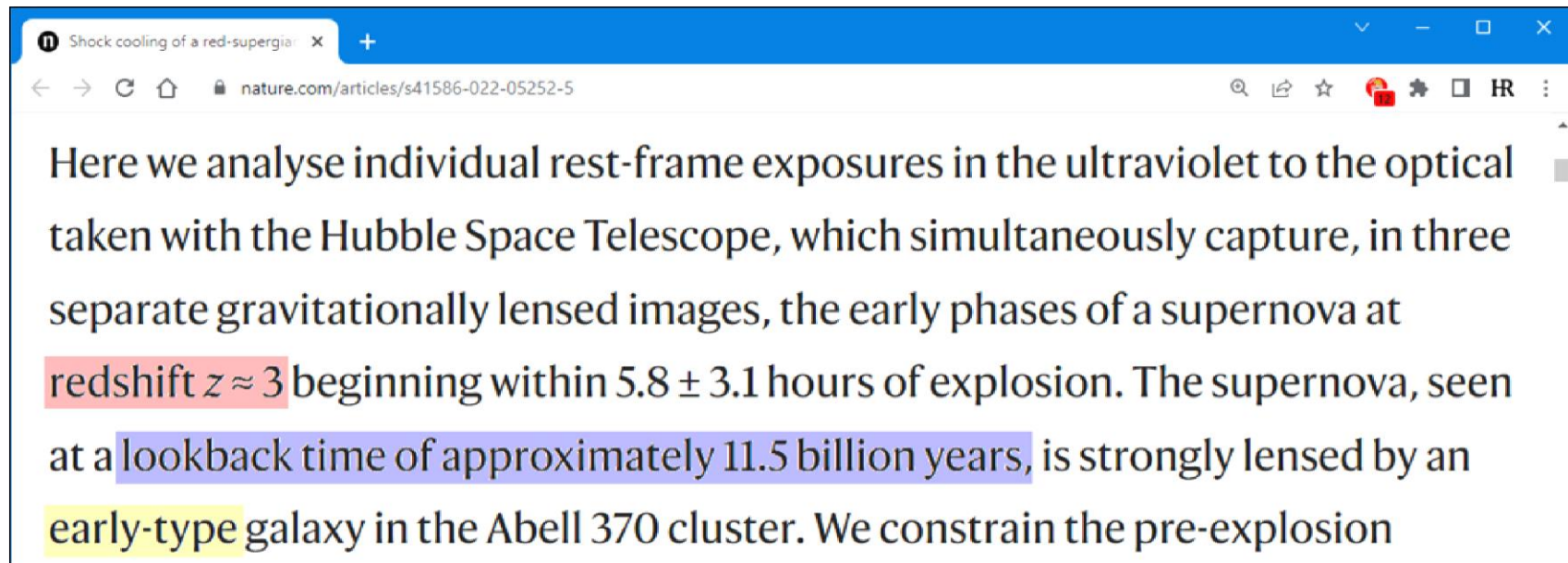
<https://arxiv.org/pdf/2207.12356.pdf>: $z \approx 16.7 \therefore \zeta = 17.7$

curr. prop. dist.: $(\zeta^2 - 1)/(\zeta^2 + 1) \approx 0.9936 \triangleq 13.68$ bln. lgt. yrs;

proper lookback time: $\Delta\tau_{l,pr} = \frac{\zeta^2 - 1}{2\zeta^3} \approx 0.028 \triangleq 388$ million years;

observed proper age: $1 - \Delta\tau_{l,pr} \approx 0.972 \triangleq 13.38$ billion years.

2022-11-09: <https://www.nature.com/articles/s41586-022-05252-5>:



$z \approx 3 \rightarrow \zeta \approx 4$ (they apparently used Peebles' Behemoth)

proper lookback time: $\Delta t_l = \frac{\zeta^2 - 1}{2\zeta^3} t_H \approx 1.6 \text{ bln. years}$

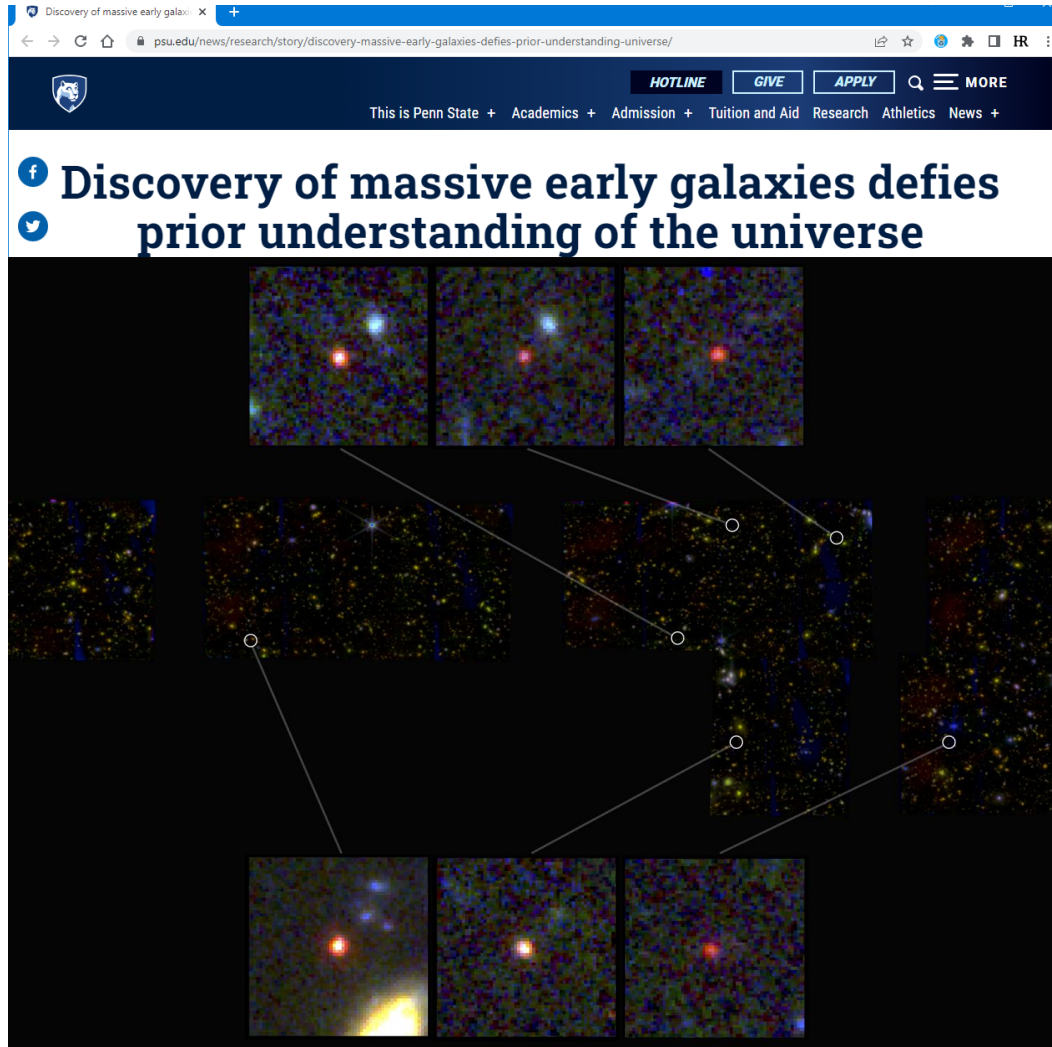
light travel time & distance: $\Delta x_l = \frac{\zeta^2 - 1}{2\zeta^2} t_H \approx 6.5 \text{ bln. (light) years}$

current proper distance: $r_p = \frac{\zeta^2 - 1}{\zeta^2 + 1} D_H \approx 12.2 \text{ bln. light years}$

SIMBAD: Abell 370: $z \approx 0.375 \rightarrow \text{observed proper age} = \left(1 - \frac{\zeta^2 - 1}{2\zeta^3}\right) t_H \approx 11.4 \text{ bln. years}$

2023-02-22:

Prior "understanding"?



Prior ignorance!

Quote:

Images of six candidate massive galaxies, seen 500-700 million years after the Big Bang. One of the sources (bottom left) could contain as many stars as our present-day Milky Way, according to researchers, but it is 30 times more compact.

Credit: NASA, ESA, CSA, I. Labbe (Swinburne University of Technology). Image processing: G. Brammer (Niels Bohr Institute's Cosmic Dawn Center at the University of Copenhagen). All Rights Reserved.

<https://www.psu.edu/news/research/story/discovery-massive-early-galaxies-defies-prior-understanding-universe/>

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HUMANS ARE SO DUMB. 8:02

 Neil DeGrasse Tyson on Why Humans Are SO DUMB.
Algototics
242K views • 1 month ago

YEAH!

Yonder:

proper distance at emission: $\rho_e = \frac{\beta}{1+\beta}$ (correct H-L law)

aging in *its* proper time: $\Delta\alpha = \frac{\Delta\tau_l}{TDF} = \frac{\beta}{1+\beta} \cdot \frac{1}{TDF}$

"emitted speed of light": $\beta_e = \frac{\rho_e}{\Delta\alpha} = TDF = \zeta$

Hubble flow: $\zeta > 1$

As if the light source has, at the moment of emission, knowledge in advance of the relative velocity of the ultimate observer and wants him to perceive the speed of light as a universal constant, so it emits each photon at just the right speed for that.

Spukhafte Fernwirkung?

Spooky action at a distance?

Homo non satis sapiens

may consider it a problem for his crippled mind & disabled perception, but for a photon, the light travel time & distance equal nought point nought; it is just an **instantaneous energy transfer** at one single location in its proper frame, hence it encounters no problem at all.

Photon's velocity from its own perspective:

$$\frac{\text{distance} = \text{nought}}{\text{travel time} = \text{nought}} = \frac{0}{0} = \text{ANY value.}$$

And what about this:

Light source leaving @ β emits:

total energy: $E_{\text{tot,e}}$

during: Δt_e

photon freq.: ν_b

Observer receives:

total energy: $E_{\text{tot,o}} = E_{\text{tot,e}}$

during: $\Delta t_o = \Delta t_e / \sqrt{1 - \beta^2}$

photon freq.: $\nu_r = \nu_b \sqrt{\frac{1 - \beta}{1 + \beta}}$

$$E = h\nu \wedge E_{\text{tot,o}} = E_{\text{tot,e}} \rightarrow \Delta t_o = \Delta t_e \sqrt{\frac{1 + \beta}{1 - \beta}}$$

$$\therefore N_{\gamma,b} = \frac{E_{\text{tot}}}{h\nu_b}$$

$$\therefore N_{\gamma,r} = \frac{E_{\text{tot}}}{h\nu_r} = N_{\gamma,b} \frac{\nu_b}{\nu_r} = N_{\gamma,b} \sqrt{\frac{1 + \beta}{1 - \beta}}$$

The observer does not receive the same amount of photons as what the moving light source emits!

∴ light cannot travel as photons, but only as a wave, *Sorry, Albert.*
 but it interacts (emission/absorbtion) as photons. *Well done, Albert!*

& What about thermal radiation with a continuous spectrum?

Einstein's paper about energy quanta (i.e. photons)
predates Special Relativity (by a few months),
but even with the classical Doppler effect
there is a mismatch in #emitted & #received,
which he could (should?) have seen.

Wave & wavelength = **emerging** phenomenon & quantity
if *oscillation* (having *frequency* ν)
and *medium* (characterised by *wave velocity* c)
come together, yielding $\lambda = c/\nu$.

For light, c is a universal constant w.r.t. the ultimate
observer. **It does not change as the universe expands.**

Once emitted, light no longer has anything to do with source.

Which ascertained truth can substantiate *frequency*
would decline if light source moves away after emission?

Altogether this means both λ & ν do not change.

**Even if light propagates as a wave instead of photons,
~~Cosmological Redshift~~ is an illusion, *not knowledge!***

Cosmic expansion \equiv *true movement of objects &
not the malarkey of "the metric itself being stretched"!*

Altogether:

current proper distance: $\rho_p = \beta_H = \frac{\zeta^2 - 1}{\zeta^2 + 1} < 1$

light travel time & distance: $\Delta\tau_l = \rho_l = \frac{\beta_H}{1 + \beta_H} = \frac{\zeta^2 - 1}{2\zeta^2} < \frac{1}{2}$

observed age = proper age at emission: $\alpha_e = 1 - \frac{\Delta\tau_l}{\zeta} = 1 - \frac{\zeta^2 - 1}{2\zeta^3}$

maximum lookback time: $\Delta\tau_{l,max} = \frac{1}{2}$ (our frame)

$1/3\sqrt{3} \approx 0.19245$ (proper frame)

Peebles' behemoth does not correspond to reality.

$$\rho_l(z) = \int_0^z \frac{dz'}{(1+z') \sqrt{\Omega_r (1+z')^4 + \Omega_m (1+z')^3 + \Omega_k (1+z')^2 + \Omega_\Lambda}}$$

Size of universe: D_H and not ℓ_p more;
ceterum censeo superluminalitatem esse delendam.

Current *proper* distance of *any* object: $r_{pr} < D_H$

observed distance of *any* object: $r_{obs} < D_H/2$

max. lookback time in *our* frame: $\Delta t_{lb} < t_H/2$

Lookback in object's *proper* frame: $\Delta t_{lb,pr} = \Delta t_{lb}/\zeta$

which has a max.: $\Delta t_{lb,pr} \leq t_H/3\sqrt{3} @ \zeta = \sqrt{3}$

at proper distance: $r_{pr} = D_H/2$

where we see the youngest proper age (11.12 Ga).

CMB was emitted 6.26 years ago in **CMB source's** proper frame, dilated to *light travel time* of 6.9 bln. years.

Ex obfervatis phænomenis deductum est
& hypothesefes non finxi.

*It has been deduced from observed phenomena
& I did not fabricate assumptions.*



Henk Reints

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