Record Redshifts: Revelations of Observations and Not Heard Predictions

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Abstract

Detection by the France-Swiss group of astronomers [Pello at al., 2004] of the object (close Abell 1835) with redshift z ~10 confirms the forecast of the theory (Wave Universe Concept) about existence in the Universe of astronomical systems with physically distinguished redshifts, in particular, close to z =10.6 This forecast made still in 80th years, was repeatedly (as a reminder) is repeated in a number of the subsequent publications [Chechelnitsky 1997,2000,2002]. For orientation of the observers conducting intense search of objects with record z, we once again remind an opportunity of existence of objects with subsequent, higher values z and we specify their most probable values z =...,10.6, 14.7(15),…,etc.

Key words: galaxies: high-redshift - cosmology

Significant opening

In the beginning of 2004 group of astronomers from Observatories Midi-Pyrenees and Geneve has declared the detection of object (close to Abell 1835) with extremely high - record value of redshift z ~10 [Pello at al., 2004]. It is, undoubtedly , not ordinary opening substantially expands an observationally verified horizon of our representations about real structure of the Universe (see also , earlier- Hu et al., 2002, Fan et al., 2003, etc.).

Redshift z ~ 10: Why and Whence?

The modern technology, accuracy and opportunities of astronomical observations, undoubtedly, do not stand on a place and are promptly improved. But the Theory?

***** *Why* redshift of the new open object makes value z ~ 10 (but not z ~ 9 or z ~11.5) ?

***** *Whence, from what theory* such prediction follows?

Two aspects

In view of such "metaphysical" questions (" Why? ") it is not difficult to note in the publication [Pello at al., 2004] two obviously traced aspects

Empirical opening: Search and Success

As follows from a context, detection of the object with extremely high - record value of redshift z ~ 10 has taken place as a result of intense empirical search. It has ended with Success

The conventional theory - Post Factum

***** What is the indicating and directing role of the standard theory in detection of object *with such* extreme (z ~ 10) value of redshift ?

If to speak extremely briefly: None.

All theoretical arsenal of the habitual theory subsequently is used only for conceptual arrange of the received empirical result. And it is clear why.

In the conventional theory there are no constructive ideas concerning the preferable, physically distinguished values of redshifts . By virtue of that it does not contain also any exact calculated formulas for predictions of redshift values (in particular, close to z ~ 10).
Therefore for interpretation of the received empirical result it is possible, generally speaking, to involve any theories. It is possible and it not do. Significance of the outstanding opening of z ~ 10 from it will not change. Rather disputable assumptions, estimations, theoretical speculations can change only some and at times.
***** But why nevertheless z ~ 10?

The Theory which predicts

Meanwhile, already for a long time there is an alternative theory, which precisely predicts such (as, for example, z ~ 10) values *of the preferable, physically distinguished* values of redshifts. And, that is the most important, does it not post factum, but beforehand and for a long time - before an empirical opening. For brevity we shall result only a fragment of one of many works from ([Chechelnitsky 2000]; see also [Chechelnitsky 2002] and earlier bibliography in [Chechelnitsky 1997]):

`` WHAT QUASARS WITH RECORD REDSHIFTS WILL BE DISCOVERED IN FUTURE?
Megaquantization in the Universe.

It is clear, *Megaquantization* (quantization "in the Large"), observed megaquantum effects are not monopolic privelege of only Solar system.

Let us point the brief resume of research (prognosis), connected with problem of redshift quantization of far objects of Universe - quasars (QSO) [Chechelnitsky, (1986) 1997]:

"*Abstract*: In the framework of the Wave Universe concept it is shown that the genesis of redshifts can be connected with the *intra-system (endogenous)* processes which take place in astronomical systems. The existence of extremal redshift objects (quasars - QSO) with most probable

z = 3.513 (3.847); 4.677; 6.947 (7.4); 10.524; 14.7; 27.79; …

is predicted."

Prognosis already had justified successively for extremal values of z redshifts

z_{theory} = 3.513, z_{obs} = 3.53 (quasar OQ172)
z_{theory} = (3.847), z_{obs} = 3.78 (quasar PKS2000-330)
z_{theory} = 4.677, z_{obs} = 4.71 (Schmidt, Gunn, Schnaider, 1989)
z_{obs} = 4.694 (4.672) (quasar BR1202-0725, Wampler et al., 1996)

At the present time, apparently, also the object Q2203+29 G73 with record value z of redshift z=6.97 is discovered in special Astrophysical Observatory (SAO, Russia)

z_{theory} = 6.947, z_{obs} = 6.97 (Q2203+29 G73, Dodonov et al., 2000).

The Queue - for objects with even more high redshifts **z = 10.524; 14.7; …**

Consequences of such successfully realizable prognosis, imperatives of observations not only are unexpected for the Standard cosmology, but also, probably, its can stimulated the radical reconsideration of many habitual representations, having become as freezen dogmas. ''

Megawave genesis and Hierarchy of redshifts

It will be expedient to repeat once again calculated formulas which follow from the alternative theory - Wave Universe Concept [Chechelnitsky (1978)1980-2004]. They are a unambiguous reference point and for the further search of objects with even more extreme redshifts .

The WU Concept ascertains the existence of direct and immediate connection between real velocity v and redshift z as $z=(v/c)^2$.
As it was specified in the previous works [Chechelnitsky 1997,2002], this relation is checked carefully up and proved experimentally - on the Earth (Pound and Rebka experiment [Pound and Rebka, 1960]) and in space - from the Sun (Brault experiment [Brault, 1963])

Thus, representation for physically distinguished - elite redshifts is fair also

$$z_N^{[s]} = [\, v_N^{[s]} /c]^2 = z_*^{[s]}\, 2\pi/N^2 , \quad s=...,2,1,0,-1,-2,...,$$
$$z_*^{[s]} = [C_*^{[s]} /c]^2 = (C_*^{[1]} /c)^2\, \chi^{-2(s-1)} = (0.265202\ \ 10^{-6})\, \chi^{-2(s-1)}$$

Here $C_*^{[1]}$ = 154.3864 km·s^{-1} is the calculated value of sound velocity in $G^{[1]}$ Shell of wave dynamic (and, in particular, astronomical) systems (WDS) which is confirmed with observations in the Solar system,

χ = 3.66(6) - Fundamental parameter of hierarchy (Chechelnitsky number) [Chechelnitsky (1978)1980 - 1986];

s - counting parameter of $G^{[s]}$ Shells, s=...,2, 1, 0,-1,-2,...,

N - main (mega) quantum numbers of elite states.

Expressions for them and concrete N values are represented in the Table in conformity with two models giving close results. Its are -

***** *Micro-Mega Analogy* (including, - with the observational data on Solar - planetary system; from here -the terms corresponding to planetary - dominant orbits),

***** *Generalized Dichotomy Law* (the extrapolation of the Titius – Bode Law on the any astronomical systems considered as wave dynamic system (WDS)).

The *Generalized Dichotomy Law* gives the following representation for N = N_ν numbers of dominant states ν

$$N = N_\nu = N_{\nu=0} \cdot 2^{\nu/2}, \quad N_{\nu=0} = 6.5037, \quad \nu = k/2, (k = 0, 1, 2, 3,\ldots)$$

Fragment of the Prediction. For the resulted values of initial fundamental parameters $C_*^{[1]}$ = 154.3864 km·s^{-1} and χ = 3.66(6) the expected dominant values of redshifts , in particular, are equal to z = …, 7, 7.5, 10.6, 14.7 (15), …, etc.

Why – the Not heard Predictions?

The editorial politics of the central astrophysical journals is still constant and short-sighted . Blind following only by the " Unique True Doctrine " results to natural and unique appreciable consequence: The broad audience of the researchers, conducting searches in the theory and, especially, - in observations, simply loses an opportunity of access to effective competing ideas and alternative theories. Thereof only some, most informed and advanced observers use constructive offers of the alternative theory (but, frequently, modestly hold back about it).

"Free" search

Once again we will address to process of the research, stated in [Pello at al., 2004].
Absence of attention to the exact forecast (certainly,that is not fault of authors, but the compelled circumstance about which it was spoken above) results it in necessity of employment of well-known and saving " Method of Poke ". Authors is compelled spend a lot of time and efforts "freely" to test a series of random chosen wavelengths λ =1.193 ?m, 1.255 ?m, 1.315 ?m, 1.365 ?m, and corresponding redshifts z ~ 8.5-10.5
Eventually they stop on intermediate value λ =1.33745 ?m (between 1.315 ?m and 1.365 ?m) and z =10.00175 ± 0.00045 (it is possible, - because of love to beautiful integers).
In absence of support of effective predictions of the theory, authors, finally, should be set and the such questions:
`` # How plausible is the observation of Lyα from such distant object?
How secure is the identification of the single line as Lyα, i.e. the redshift z=10.0 ? …''
Our answer to such questions can look as follows.
We believe, that the found value z =10.00175 ± 0.00045 *is not final. Considerably in observations the value z, close to the predicted dominant value z = 10.6 has an every prospect of manifestation.*

Not verified reflections

With discussion of the specified two questions, to an essence, the most valuable and informative empirical part of work [Pello at al., 2004] comes to an end.. And, at last, after that authors " are started up in free navigation " on waves of the conventional theory, switching Big Bang, lensing model, etc. It results and in the following ascertaining:

`` Assuming ``concordance'' cosmological parameters (Ω_m =0.3, Ω_Λ =0.7, and H_0 =70 km s^{-1} Mpc^{-1}) the age of Universe at redshifr 10.0 is just ~ 460 Myr after the Big Bang. In other words the galaxy we have detected lies at a distance corresponding to only ~ 4% of the current age of the Universe. According to the lensing model…'' etc., etc.

We do not have big desire to discuss (to agree, especially) such speculative exercises and conclusions connected to them, Shall leave such opportunity to believing adepts of Big Bang.

Discussion: Reminiscences and not heard conclusions

Where limits (barriers) on z?

In view of an observable stream of openings connected to (once predicted) extreme values of redshifts , - who now recollects vast reasonings (within the framework of the standard theory) about existence in the Universe of limits on z value, or about absence of preferable peaks in distribution of redshifts z? However, last representations (monotonous models of the conventional theory) still continue to live, nobody heard a voice of opponents until observations by force way have proved absence of any limits and barriers on z. The fashion for barriers in cosmology, apparemtly, is closely connected to still hardy representation of the conventional theory about existence of limiting velocity of waves propagation in the Universe - presence in it of the Barrier of light speed [Chechelnitsky 2004].

Why - is *extremely long* ago - right after Big Bang?

Considerations about a birth of extreme redshifts during very far epoch - only during first times after Big Bang - concern also to the same type of habitual representations.

The alternative theory (WU Concept) asserts:

Astronomical objects with extreme values of redshifts exist, are born and die *and now*. They it is permanent generate radiation with the shifted lines (in particular, Ly α) *and in present period*.

In other words, *extreme redshifts are born always, but not just during the first epoch - right after Big Bang..*

Why - is *extremely far*?

Objects with extreme redshifts not necessarily are on extreme distances as it follows from habitual representations of standard cosmology and rectilinearly understood Hubble's Law.

They can be, generally speaking, *on the any distances allowable by the Cosmological Distances Law* [Chechelnitsky 2002,2003]

$$d = D\cdot 10^{m/5} R z^2$$

Here d - cosmological distance, m – apparent magnitude of astronomical object (source of radiation), R - radius of a source, z - redshift, $D=0.58608\cdot 10^{19}$ - constant (Chechelnitsky 1986-2001, see also JENAM 2001: Nature and Physical Genesis of Hubble Postulate and Cosmological Distances Law: Geometrodynamics or Photometrics?).

In linear representation of the Hubble Postulate

$$d = d_{z=1}^{(H)} z = (c/H)z, \quad d_{z=1}^{(H)} = c/H, \qquad \text{c- speed of light,}$$

Hubble's H constant can be found as Hubble's *Variable*

$$[D\cdot 10^{m/5} R z] = c/H = \text{varia}, \qquad H=c/[D\cdot 10^{m/5} R z],$$

generally speaking, *dependent on variables* m, R, z. Thus and the distance d is determined *not only by redshift z*, but also and by parameters m, R of astronomical object (therefore the distance can be and it is not necessarily extreme large).

In the Wave Universe Concept it is shown the nonkinematical, nondoppler, nontransitional (no ``galaxies scattering"), but endogenic, physical (temperature) genesis of the redshift, of the Cosmological Distances Law, of the Hubble Postulate (Law). The Cosmological Distances Law (as well as Hubble Postulate) is the essentially law of Astrophysical (Megaquantum) Photometrics, instead of law of (doppler) kinematics - scattering of the Universe (of speculative postulates of Geometrodynamics).

Sooner or later Standard Космологии it is necessary to get used to such reality... (see [Chechelnitsky 2001, 2002, 2003]).

In pending of Changes

Despite of observable memory blackouts of standard cosmology, anyhow, we would like to be heard once again, at least, by the advanced observers (it will keep to them a set of efforts and will save up a time spent for total "combing" or casual, chaotic search):

Search the objects with extreme, record values of redshifts in the areas close to dominant - physically distinguished z (see the formula above) and, in particular, in the near future, close to z = …, 7, 7.5, 10.6, 14.7 (15)...,etc. And let you are accompanied with Success!

Approaches, there comes the time when Cosmology will cease to be Canonical Religion, but becomes promptly developing fundamental Science, in which *discussion is not only necessary, but also is possible.* We shall hope, that new observational opening and justified unambiguous predictions substantially approach this epoch.

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