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HUBBLE CONSTANT OR HUBBLE VARIABLE H ?: WHY THE "EXACT" H IS NOT DISCOVERED?

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For many decades outstanding researchers are continuing the wasting search of the Unique Right value of the H Hubble Constant.We have not seeing the end of such activity for a long time...According to representations of the Wave Universe Concept (WU Concept)(see,for instance,Chechelnitsky A.M. Hot Points of the Wave Universe Concept: New World of Megaquantization, Report to International Workshop "Hot Points in Astrophysics",22-26 August 2000,Dubna,Russia;http://arXiv.org/abs/ physics/0102036 and corresponding Proceedings),such confrontation can be very durable (similar to the Sizif's Work)-so long as reseachers will be following by representations of the "Unique Right Doctrine" of modern cosmology -of the Standard Cosmology-and,at last,will have not appreciated the true physical sense of the Hubble Variable H in the light of the Cosmological Distances Law

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

Here d-cosmological distance,m-apparent magnetude of astronomical object(radiation source),R-radius of source, z-redshift, D=0.58608 · 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 the linear representation of the Hubble Postulate

$$d = d_{z=1}^{(H)} z = (c/H)z, \quad d_{z=1}^{(H)} = c/H,$$

c-light velocity,
the H Hubble "Constant" can be found as the Hubble Variable

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

generally speaking, depending from variables m,R,z.

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). 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).

Modern Cosmology else will be accustomed to the such reality...

UNCEASING CONTROVERSY ABOUT HUBBLE CONSTANT

Searches of the "True" value of Hubble Constant H have the long and dramatical History. All was began from Hubble himself [Hubble,1929]. Using Local Group of galaxies, he at first determined the value of proportionality constant K(Hubble's designation) in his Law (or Postulate)

$\Delta\lambda/\lambda_0 = K'r$ (K' = const), $\tilde{v} = cz = cK'r = Kr$, $\tilde{v} = Hr = Hd$ ($cK' = K = H$),

connected $\tilde{v}$ –radial velocity (below , we shall speak, *formal velocity* $\tilde{v} = cz$)
(c - velocity of light, $z = \Delta\lambda/\lambda_0$. - redshift, K(= H) - Hubble constant) with d=r – distance to astronomical object.
Constant was found equal to K(=H) = **530 km·s^{-1}·Mpc^{-1}** . And was began…
The search of its "Exact" value is continuing already near ? century,but outstanding researchers-theorists and observers -up to now can not come to the unique opinion .
At that time Constant was decreased at some times,but hitherto was not calmed down…

ONE (FROM MANY) PREDICTION

From many existing predictions,we expose only one (Tammann,1996). It merit the attention,becouse it was expressed decisive,open,unambiguous.
" …*Foreigner:* I still wonder why so high values of H have been around so long. What is your prediction for the future?
Ion: I can only extrapolate from the past. While the value of H =55+/-5 has been with us for 20 years (Sandage and Tammann 1975,1982,1986,1990,1995),it was contrasted at the beginning by H =100 (de Vaucouleurs and Bollinger 1979),then by H=90 (Aaronson et al.1986;Aaronson and Mould 1986) and H=80 (Freedman et al.1994);by now the highest values in the literature cluster around H=75 (e.g.,Freedman 1996; Mould et al.1995;Tonry 1996).An upper limit of H=70 is given by Gouguenheim et al.1996. If you allow me to draw a least-squares solution through the high values…,**I predict that everybody will agree with H =55 by July 1st,2007**. If the true value lies rather closer to H=60 the grand unification may occur even earlier…"
It is clear,the general picture of confrontation and list of participants significantly wide. And opinions of reseachers are not rectilinear,are interestig ,various and well argumented. (Kim et al.1998,Tammann,Sandage & Saha 2000,Freedman et al.2000,Leibundgut 2001,Arp 2001,Freedman 2002, etc)
Nevertheless,main tendention (considered necessary brevity of statement) is emphasized sufficiently clear.

ANOTHER HORIZONS

New light on the problem spill up the investigations realized in framework of the **Wave Universe Concept (WU Concept).** New results may be found extremely unexpected and contradicted to a conventional views on the becoming habitual problem . Instead it is gradual begin clear up the perspectives and fate of the Unceasing Controversy .

WAVE UNIVERSE CONCEPT

Many extremely important problems of Physics of the Universe and Cosmology, questions about relation between objects of micro and megaworld have the answers in framework of the **Wave Universe Concept** (see monograph-Chechelnitsky A.M.Extremum, Stability, Resonance in Astrodynamics and Cosmonautics,Mashinostrojenie,1980,312 p.and consequent publications;***http://arXiv.org/abs/physics/0102036***). WU Concept suggests that arbitrary systems not only of microworld,but and giant astronomical systems of megaworld possess by the general fundamental aspect(property)-all these dynamic systems,of principle,are the **WAVE** dynamic systems (WDS).If the Quantum Wave Mechanics describe the wave structure of microscopic scales objects,then the **Megaquantum Wave Astrodynamics** (see Chechelnitsky,1980-2002) analyze and emphasize the **MEGAWAVE** structure of giant astronomical systems-presence of waves and rhythms of large length and periods in these planetary and galaxies systems. The fundamental,of principle new approach argue its effectiveness in many Hot Points of Physics and Cosmology (see ***physics/0102036***)-from analysis and discovery of the mass spectrum of neutrino(***physics/0103066***) - to the redshift spectrum of extremely far quasars(***physics/0102089***).The true physical structure of the Universe at large scales can be understand only in context of the Wave Hierarchy,existence of very large astronomical objects,Unity and Universality of wave structure of arbitrary objects of the Universe(***physics/0102008***).

WAVE UNIVERSE CONCEPT AND COSMOLOGICAL DISTANCES LAW

(THE LAWS OF WU CONCEPT INSTEAD OF GEOMETRYDYNAMICS)

WU CONCEPT PREAMBLES TO CD LAW

HIERARCHY OF SHELLS, VELOCITIES, TEMPERATURES, REDSHIFTS

The observed physycal and dynamical structure of arbitrary astronomical systems - from planetary systems to galaxies superclasters - is close connected with its *wave (megawave)* and *Shell* structure.

That is one of principal assertion of the *Wave Universe Concept* [Chechelnitsky, 1980 - 2001]. Internal dynamical structure each of $G^{[s]}$ Shells of astronomical systems (characterized by dominate component of cosmic plasma with $C_*^{[s]}$ *sound velocity*) is connected with existence in it of some physical distinguished, particulary stable, stationary - *elite states* (orbits, motions, levels). To these physycally preferable states correspond:

#(i) Hierarchy of elite velocities

$$v_N^{[s]} = C_*^{[s]}(2\pi)^{1/2}/N \qquad C_*^{[s]} = (1/\chi^{s-1})\cdot C_*^{[1]}, \qquad (s=....,-2,-1,0,1,2....),$$

here $C_*^{[1]} = 154.3864\ km\cdot s^{-1}$ is the calculated value of *sound velocity* in the $G^{[1]}$ Shell, that was made valid by observation,

$\chi \cong 3.66(6)$ - is the *Fundamental parameter of hierarchy* – Chechelnitsky Number (Chechelnitsky, 1980-1986).

N - (Mega)Quantum numbers of *elite states*,

a) Close to

$N_{dom}^{[s]}$ = 8; 11; 13; (15.5)16; (19,5); (21,5) 22,5 - for the *strong elite (dominant) states* (orbits);

b) Close to

N - Integer, Semi-Integer – for the *week elite (recessive)* states (orbits).

In the wave structure of the Solar System for planetary orbits of Mercury (ME), Venus (V), Earch (E), Mars (MA), we have, in particular, $N = (2\pi a/a_*)^{1/2}$ (a - semi-major axes of planetary orbits, $a_*^{[1]} = 8R_\odot$ - semi-major axis of *Transsphere* - $TR_*^{[1]}$, $R_\odot$ - radius of Sun) [Chechelnitsky, 1986].

N = 8.083; 11.050; 12.993; 16.038, close to *integer*
N = 8; 11; 13; 16.

Take into account Ceres (CE) orbit and transponated in $G^{[1]}$ (from $G^{[2]}$ Shell) planetary orbits of Uranus - (U), Neptune - (NE), Pluto - (P), it can be received the general representation for observational dominant N

	TR_*	ME	TR	V	E	(U)	MA
N=	$(2\pi)^{1/2}$=2.5066	8.083	$(2\pi)^{1/2}\chi$=9.191	11.050	12.993	15.512	16.038

(NE)	CE	(P)
19.431	21.614	22.235

#(ii) Hierarchy of elite temperature

by virtue of relation

$$T = (1/3k)m_e v^2 ,$$

where k - Boltzmann constant, m_e - electron mass and then follow

$$T_N^{[s]} = (1/3k)m_e(v_N^{[s]})^2 = T_*^{[s]}(2\pi/N^2) = T_{N=1}^{[s]}/N^2 ,$$

$$T_{N=1}^{[s]} = 2\pi T_*^{[s]}, \quad T_*^{[s]} = (1/3k)m_e(C_*^{[s]})^2$$

[Chechelnitsky, 1998].

#(iii) Hierarchy of elite redshifts

use the relation [Lang, 1978, p.310]

$$z = \beta^2 = (v/c)^2, \qquad \beta = v/c ,$$

where c=299792.458 km·s^{-1} - light velocity.

This correlation between redshift z and (orbital) velocity v (differing from other relations) is carefully examined experimentally in laboratory conditions - on Earth (Paund and Rebka experiment) [Paund and Rebka, 1960] and in Space - from the Sun (Brault experiment) [Brault, 1963].

It is interesting to note also that using square dependence in the functional (mathematical) plane, in fact, is identical to relation used in the calculation the so called gravity redshift [Lang, 1978, p. 310]

$$z = GM/c^2r = (v/c)^2,$$

where v^2=GM/r, v - orbital velocity.

And then it is valid the relation -

$$z_N^{[s]} = (v_N^{[s]}/c)^2 = z_*^{[s]}(2\pi/N^2) = z_{N=1}^{[s]}/N^2 ,$$

$$z_{N=1}^{[s]} = 2\pi z_*^{[s]}, \quad z_*^{[s]} = (C_*^{[s]}/c)^2$$

c=299792.458 km·s^{-1} - light velocity [Chechelnitsky, 1997].

TEMPERATURE – REDSHIFT LAW

From (ii) $T = (1/3k)m_e v^2$ and (iii) $z = (1/c^2)v^2$ it is naturally followed the analitical dependence

$$T = T_{z=1}z, \quad T_{z=1} = (1/3k)m_e c^2 = \text{const}$$

and thus become valid the following assertion.

Proposition (T - z Law)

Observed z redshifts of astronomical systems (galaxies, quasars, etc.) are indicators of its *endogenic, physical processes*, *of T temperatures* of its some *internal regions*. In this case T (electronic) temperature is directly proportional to observed z redshift

$$T = T_{z=1}z, \quad T_{z=1} = (1/3k)m_e c^2 = \text{const}$$

CD LAW – AS CONSEQUENCE OF ASTROPHYSICAL PHOTOMETRICS

There are exist some ways of a derivation of the Cosmological Distances Law(CD Law). Here we follow more simplest and chronologically the first way (Chechelnitsky 1986,2000).

In the frame of WU Concept it is possible to separate following aspects of the Astrophysical (Megaquantum) Photometrics.

Local Aspect of Radiation Source

The Stefan – Boltzmann law connects *the luminosity* (complete output of radiation) L with *temperature* T and *radius* R of radiation source (with a surface $S=4\pi R^2$ of radiation)

$$L = 4\pi R^2 \sigma T^4,$$

where σ - the Stefan – Boltzmann Constant.

Distant Aspect of Detector of Radiation (Observer)

This aspect is connected to intuitively clear dependence of a f radiation flux detected by Observer from a square of d distance (surface of sphere $S = 4\pi d^2$).

The balance is supported by a relation $L = 4\pi d^2 f$.

Conservation Law

The corresponding functional relation F (f, d, T, R) = 0, reflecting the concervation law of energy,has the following obvious kind

$$4\pi d^2 f - 4\pi R^2 \sigma T^4 = 0$$

Megaquantum Aspect

From point of the WU Concept it is understood also that functional variables of the Astrophysical (Megaquantum) Photometrics (including variables of the CD Law) admit the Existence of physically distinguished ,discrete values (states) – *elite (dominant)* states (for instance,-for velocities $v_N^{[s]}$,temperatures $T_N^{[s]}$,redshifts $z_N^{[s]}$,etc.) (Chechelnitsky 1986,2000).

COSMOLOGICAL DISTANCES LAW

Very important **Temperature - Redshift T-z Law ($T = T_{z=1}z$)** (Chechelnitsky 1986,2000) naturally leads to the possibility of formulation of d=F(z) Cosmological Distances Law (CD Law), in particular, in form

$$d = d_{z=1}z^k$$

The representation for cosmological distance d in dependence from T (electronic) temperature follows from the relation $4\pi d^2 f - 4\pi R^2 \sigma T^4 = 0$.

In the explicit form

$$d = [R/(f/\sigma)^{1/2}]T^2 = d_{T,R=1}RT^2, \quad d_{T,R=1}=(\sigma/f)^{1/2},$$

$$d=d_{T=1}T^2, \; d_{T=1}=R(\sigma/f)^{1/2},$$

and further, with using of T-z Law ($T = T_{z=1}z$), we arrive to the Cosmological Distences Law

$$d = d_{z=1}z^2, \quad (k =2),$$

$$d_{z=1} = T_{z=1}^2(\sigma/f)^{1/2} R,$$

or

$$d = d_{z,R=1}\cdot Rz^2, \quad d_{z,R=1} = T_{z=1}^2(\sigma/f)^{1/2}$$

Taking into account, that f observed energy flux is uniquely connected with $m=m_b$ (bolometric) apparent magnitude [Lang, 1978, p. 310]

$$f = 2.52\cdot 10^{-5}\cdot 10^{-0.4m} \; [erg/(cm^2\cdot s)],$$

it may be, for instance, stated, that set of objects, characterized by equal $m=m_b$ (m_b - const and thus, f - const, by equal f observed energy flux), are subjected to the Cosmological Distances Law in the form

$$d = d_{z,R=1} R z^2, \;, \quad \text{when} \quad d_{z,R=1} = T_{z=1}^2(\sigma/f)^{1/2} = \text{const}.$$

In the case, when that set of objects represents more or less homogeneous population with equal R radiuses of radiation regions (R=const), the CD Law may be represented in the form

$$d = d_{z=1}z^2, \; d_{z=1} = T_{z=1}^2(\sigma/f)^{1/2} R = \text{const}.$$

The same is valid when only $d_{z=1} = T_{z=1}^2(\sigma/f)^{1/2} R = \text{const}$ (but $R \neq \text{const}$,

$$d_{z,R=1} = T_{z=1}^2(\sigma/f)^{1/2} \neq \text{const}).$$

General Form of CD Law

The explicit representation of the CD Law (with dependence of m,R,z) values has the following General Form

$$\mathbf{d = D\cdot 10^{m/5}Rz^2}$$

where coefficient D =const is nondimensional value.

The Law T-z (Temperature – Redshift): Numerical Value of Coefficient.

The Law T-z

$$T = T_{z=1}z$$

ascertains the *linear* dependence of (electronic) temperature T from z - redshift.

Coefficient of proportionality according to WU Concept representations has the following numerical value

$$T_{z=1} = (1/3k)m_e c^2 = 1.97662\cdot 10^9 K = 0.170332 \text{ Mev}$$

Here $m_e = 9.1093897\cdot 10^{-28}$ g – electron mass,

$c = 2.99792458\cdot 10^{10}$ cm·s^{-1} – velocity of light,

$K = 1.380658\cdot 10^{-16}$ erg·K^{-1} – the Boltzmann constant, and also 1ev = 11604.5 K.

Variants of Representation of the Cosmological Distances Law

Representation d = d (f, R, z).

As is known [Chechelnitsky, 1986, 2000], the using as arguments of a f - flux of energy, R - radius of a source, z - redshift results the following form of the Cosmological Distances Law (CD Law)

$$d = d_f f^{-1/2} R z^2,$$

where the constant $d_f = T_{z=1}^2 \sigma^{1/2}$, dependent from fundamental constant, has the following numerical value

$$d_f = T_{z=1}^2 \sigma^{1/2} = 0.29421 \cdot 10^{17}\ \mathrm{erg}^{1/2} \cdot \mathrm{s}^{-1/2} \cdot \mathrm{cm}^{-1}.$$

Here $\sigma = 2\pi^5 k^4/15h^3c^2 = 5.67051 \cdot 10^{-5}$ erg· $\mathrm{cm}^{-2} \cdot \mathrm{K}^{-4}\mathrm{s}^{-1}$ - constant of the Stefan-Boltzmann Law.

Representation d = d (m, R, z).

The dependence of the Cosmological Distances Law from f - flux of energy can be effectively replaced by dependence from *(bolometrical) apparent magnitude* $m=m_b$ by virtue of the relation (Allen, 1977)

$$f = \beta \cdot 10^{-(2m/5)} = (2.52 \cdot 10^{-5}) \cdot 10^{-0.4m}, \text{ where } \beta = 2.52 \cdot 10^{-5}\ \mathrm{erg/(cm^2 \cdot s)}.$$

Taking into account $f^{1/2} = \beta^{1/2}/10^{m/5}$,we get the representation for the Cosmological Distances Law as

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

where coefficient D has numerical value

$$D = T_{z=1}^2 (\sigma/\beta)^{1/2} = 0.58608 \cdot 10^{19}$$

Representation d = d (m, R/R$_\odot$, z).

The representation of the Cosmological Distances Law (CD Law) as dependences only from dimensionless arguments is possible. For example, at use of normalizing of R-radius of a source (of radiation) on well-known value $R_\odot$ = 696000 km - radius of the Sun, we get the following kind of the CD Law

$$d = (DR_\odot) \cdot 10^{m/5} (R/R_\odot) z^2 = d_\odot \cdot 10^{m/5} (R/R_\odot) z^2.$$

The numerical value of dimensional coefficient $d_\odot$ thus is equal

$$d_\odot = DR_\odot = 0.58608 \cdot 10^{19} R_\odot = 0.4079119 \cdot 10^{25}\ \mathrm{km} = 132195.23\ \mathrm{Mpc}$$

(at 1 pc=$3.085678 \cdot 10^{13}$ km).

It is clear, that using of the value $R_\odot$ as normalizing parameter has *conventional character*. Therefore and to value of length $d_\odot$ = 132195.23 Mpc it is necessary to give only *conditional relative (conventional) sense*.

Special (Subsets of) Population of Astronomical Systems

HUBBLE LAW POPULATION

As is known, the Hubble Law offers the following linear dependence

$$\tilde{v} = cz = Hd$$

between, we shall speak, *formal velocity* $\tilde{v} = cz$ (c - velocity of light, z - redshift, H - Hubble constant) and cosmological distance d. In essence, it is a *linear* dependence of a kind

$$d = d_{z=1}^{(H)}z = (c/H)z, \qquad d_{z=1}^{(H)} = c/H,$$

between cosmological distance d and redshift z.

In frameworks of more general *nonlinear* on z CD Law

$$d = D\cdot 10^{m/5}Rz^2 = [D\cdot 10^{m/5}Rz]z$$

it is easy to get the real representation for some subset of astronomical systems, submitting to the Hubble Law.

This *particular* section, we shall name its as *Hubble Law Population - HL Population*, communicates by a rigid compulsory relation

$$[D\cdot 10^{m/5}Rz] = c/H = \text{const},$$

if to consider - according to fundamental representations of modern cosmology (Standard Cosmology), that in a Nature there is constant and unchangeable - a *unique and final* value of *Hubble "Constant"* H (H = const)

Hubble Variable H.

Actually, if not to limit itself with severe constraints H = const (or c/H = const), than by virtue of the Cosmological Distances Law the more general relation takes place

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

from which the general representation follows for, we shall speak, *Hubble Variable H*

$$H=c/[\,D\cdot 10^{m/5}Rz].$$

Generally Hubble Variable H appears by function of three *variables (arguments)* m, R, z. Thus, if not to require performance of severe restriction H=const and condition, connected to it

$$[D\cdot 10^{m/5}Rz] = c/H = \text{const},$$

than relation H - varia, in essence, means *simple replacement* of variables at use of substitution

$$c/H = [\,D\cdot 10^{m/5}Rz]$$

Thus,it is entered the new variable H – varia instead of one of former m, R, z.

TWO –DIMENSIONAL SECTIONS

It is easy to imagine, that, besides of HL Population - subset, limited by *three-dimensional* section – by dependence on *three* variables m, R, z

$$[D\cdot 10^{m/5}Rz] = c/H = \text{const},$$

it is possible the consideration and of others particular, for example, *two-dimensional* sections and of appropriate Populations of astronomical systems. For three components $10^{m/5}$, R, z, for example, elementary *two-dimensional* linear relations (sections) are possible:

#Two-dimensional Rz Population **Rz = const**

#Two-dimensional $10^{m/5}$R Population **$10^{m/5}$R = const,** etc.

It is clear, that use and other subsets (Populations), for example, following kind is possible

$$\mathbf{10^{m/5}/z = const.}$$

As far as such Populations are physically substantial can show the subsequent analysis.

TWO –DIMENSIONAL Rz POPULATION

Such Population of astronomical systems is characterized by dimensional (length) invariant Rz= const

$$\mathbf{Rz = const = R_z.}$$

The convenient form of representation

$R_z = I_z R_\odot$ and then it is fair $Rz = I_z R_\odot$.

Normalizing on widely known parameter $R_\odot$ - radius of the Sun here is used. Thus is got *dimensionless invariant* I_z = const

$$\mathbf{zR/R_\odot = I_z = const.}$$

Physical Sense of I_z Invariant

The theory (WU Concept) opens physical sense such invariant. Taking into account representation of WU Concept for *redshift z* [Chechelnitsky, 1986, 2000]

$$\mathbf{z = (v/c)^2 = (1/c^2)(K/a),}$$

where $v^2 = K/a$, v - velocity, a – semi-major axis of an orbit, K = GM - Gravitational parameter of astronomical system, we have $\mathbf{az = K/c^2 = a_z,}$

or in other form at $a \equiv R$ $\mathbf{Rz = K/c^2 = R_z.}$

That is the well known from Laplase time "gravitational radius" of astronomical object (for instance,of the Sun with $K= K_\odot$).

The dimensionless form of this relation looks like

$$\mathbf{(R/R_\odot)z = I_z = R_z/R_\odot = (K/c^2)(1/R_\odot).}$$

Other Astronomical Systems

Generally for any astronomical systems it is meaningful to use the following representation for invariant $\mathbf{(R/R_\odot)z = I_z = \gamma I_{z_\odot}.}$

Here $I_{z_\odot}$ - numerical value of dimensionless invariant for Solar system,

γ - dimensionless multiplier subject to concrete definition.

Taking into account a relation $I_z = \gamma I_{z_\odot} = (\gamma K_\odot/c^2)(1/R_\odot)$, it is possible to understand γ**=M/M**$_\odot$ and as the *multiplier of mass* of astronomical system in relation to Solar system. Subsequently about value γ the constructive reasons can be stated.

Possible Numerical Values of Invariants R_z and I_z.
Star Systems. Solar System.

The representation about possible numerical values of invariants R_z and I_z for star systems can give an example of the *Solar system* - typical representative of the world of stars.

We have for the *Gravitational parameter* of the Sun

$$K = K_\odot = 1.32712438\cdot 10^{11}\ km^3\cdot s^{-2}$$

and velocity of light

$$c = 299792.458\ km\cdot s^{-1}$$

value of *dimensional* invariant Rz = const = R_z

$$\mathbf{a_{z_\odot} = R_{z_\odot} = K_\odot/c^2 = 1.76625\ km}$$

and of *dimensionless* invariant $(R/R_\odot)z = const = I_z$,

$$\mathbf{I_{z_\odot} = R_{z_\odot}/R_\odot = (K_\odot/c^2)(1/R_\odot) = 0.2122\cdot 10^{-5}}$$

The value $a_{z_\odot} = R_{z_\odot} = K_\odot/c^2 = 1.76625$ km - that (and) is the "gravitational radius" of the Sun.

The Cosmological Distances Law for Rz Population.

For set of astronomical objects, limited by a relation

$$(R/R_\odot)z = l_z = \gamma l_{z_\odot} = \text{const},$$

the Cosmological Distances Law

$$d = d_\odot 10^{m/5}(R/R_\odot)z^2, \qquad d_\odot = DR_\odot = 132195.23 \text{ Mpc}$$

can accept the following particular form

$$d = [d_\odot 10^{m/5}(R/R_\odot)z]z = [d_\odot 10^{m/5}\gamma l_{z_\odot}]z = \gamma(d_\odot l_{z_\odot})10^{m/5}z = \gamma\, d_{\odot Rz} \cdot 10^{m/5}z = d_{Rz} \cdot 10^{m/5}z,$$

$$d_{Rz} = \gamma\, d_{\odot Rz}, \qquad d_{\odot Rz} = d_\odot l_{z_\odot} = 132195.23 \text{ Mpc} \cdot 0.2122 \cdot 10^{-5} = \mathbf{0.280518 \text{ Mpc}}$$

Hubble Variable for Rz Population.

For objects of Rz Population the Hubble variable H, entered by substitution

$$c/H = D10^{m/5}Rz = d_\odot 10^{m/5}(R/R_\odot)z,$$

is determined as follows

$$c/H = \gamma(d_\odot l_{z_\odot})10^{m/5} = \gamma\, d_{\odot Rz}\, 10^{m/5}$$

and further

$$H = c/(\gamma\, d_{\odot Rz}\, 10^{m/5}).$$

Hubble Variable and Characteristic Apparent Magnetudes of Rz Population.

With the aims of the further analysis it is interesting to present the concrete relations between widely used values H (for example, boundaries in H = 100 and H = 50 $km \cdot s^{-1} \cdot Mpc^{-1}$) and apparent magnetudes m, characteristic for Rz Population.

Case $\gamma = 1$. For simplicity we shall be limited at first by a case $\gamma = 1$.

Boundary H = 100 $km \cdot s^{-1} \cdot Mpc^{-1}$.

In this case we have a relation

$10^{m/5} = c/(\gamma\, d_{\odot Rz}\, H) = 299792.58$ км$\cdot s^{-1}$/(0.280518 Mpc $\cdot$100 км$\cdot s^{-1} \cdot Mpc^{-1}$) = 10687.09,

m/5 = 4.0288,

and appropriate apparent magnetude **m = 20.144.**

Boundary H=50 $km \cdot s^{-1} \cdot Mpc^{-1}$.

The calculations result the apparent magnetude m=**21.649.**

 # Case $\gamma = 2.5$

Boundary H = 100 $km \cdot s^{-1} \cdot Mpc^{-1}$.

Relation

$10^{m/5} = c/(\gamma\, d_{\odot Rz}\, H) = 299792.58$ км$\cdot s^{-1}$/(2.5$\cdot$ 0.280518 Mpc $\cdot$100 км$\cdot s^{-1} \cdot Mpc^{-1}$) = 4274.84,

m/5 = 3.63 results the appropriate apparent magnetude **m = 18.154**

Boundary H=50 $km \cdot s^{-1} \cdot Mpc^{-1}$.

The calculations result the apparent magnetude **m=19.659.**

Intermediate value H = 72 $km \cdot s^{-1} \cdot Mpc^{-1}$.

The calculations result the apparent magnetude **m=18.867.**

It is interesting note that,for instance, Freedman et al.2000 insist on the value *H = 72 $km \cdot s^{-1} \cdot Mpc^{-1}$* ,working with set of astronomical objects with **m < 19(19.5)** in range m = 14 - 19(19.5).

SEARCH OF HUBBLE "CONSTANT". THE GENERAL TENDENCY

In connection with the general analysis of WU Concept with use of the Cosmological Distances Law it is possible to ascertain the rather general statement connected with conducted already almost on extent of (3/4) of century, intensive search of numerical value of Hubble “Constant” H. The general analysis shows, that this statement, generally speaking, is fair not only for the limited population (in particular, for Rz Population) of astronomical objects.

PROPOSITION (General Tendency in Search of H).

Analysis and results of observations of astronomical objects with the aims of definition of Hubble "Constant" H is characterized and will be characterized by the following *General tendency*:

Processing of statistics (of data of rather homogeneous catalogues), containing *bright* astronomical objects (*small* numerical values of apparent magnetude m) results and will result to the rather *large* numerical values of Hubble "Constant" H

$$H \rightarrow 100\ \text{км}\cdot s^{-1}\cdot Mpc^{-1}\ \textit{and more}.$$

The same processing of *faint* (including *extremely far*) astronomical objects (*large* numerical values m) results and will result in the future to *small* numerical values

$$H \rightarrow 50\ \text{км}\cdot s^{-1}\cdot Mpc^{-1}\ \textit{and less}.$$

PERSPECTIVES OF UNCEASING CONTROVERSY

Who will right or not right, will won or not won in that Unceasing Controversy ? It is found that result it has not necessity to wait so long time- to “July 1st,2007”.
Already now in the light of accumulated knowledge in WU Concept it can be supposed that all participants of that Controversy have won or have not won the Controversy – it is in dependence of whether commentator is optimist or pessimist.
And indeed,every opponent can be found right in the framework of such initial observational data which he used:
Researchers,who used (nearby) bright astronomical objects (with small apparent magnetude m),with small redshifts (z<<1) have received values of H close to H=100.
Observers, who had possibility and desire to use (far) faint objects (with large m), with large z redshifts,have received H close to H =50.
General movement of technical progress in observational astronomy,possibility of detecting of more and more faint objects (with large m),generally speaking,correspond to the evolution H =100 to H =50 (and less). But that is not at all signify that in any time is absent possibilities for continuing to use close and bright objects for the determination of Hubble “Constant” H.
It is clear that such activity can be prolonged not only to 2007,but forth to 3000…
Until it will be not clear - participants of Unceasing Controversy follow Mirage…
Unique Right,True value of Hubble “Constant” – is not exist! Becouse H is not Constant, but – Variable!

BEYOND GEOMETRODYNAMICS AND EXPANDING UNIVERSE

Perspectives of Modern Cosmology depend from new ideas involved in the wide consideration by scientific community. In close connection with this
Wave Universe Concept insist on the assertion that genesis of the **redshifts has the real physical (not geometrical) nature,has nonkinematical,nondoppler, nontransitional (no ``galaxies scattering''), but endogenic, physical (temperature) character.**
WU Concept fundamentally argue that **Hubble Law is consequent of the Astrophysical (Megaquantum) Photometrics, of the Cosmological Distances Law** (its linear approximation),**but is not result of the Geometrodynamics-(doppler) kinematics and scattering of the Universe** .

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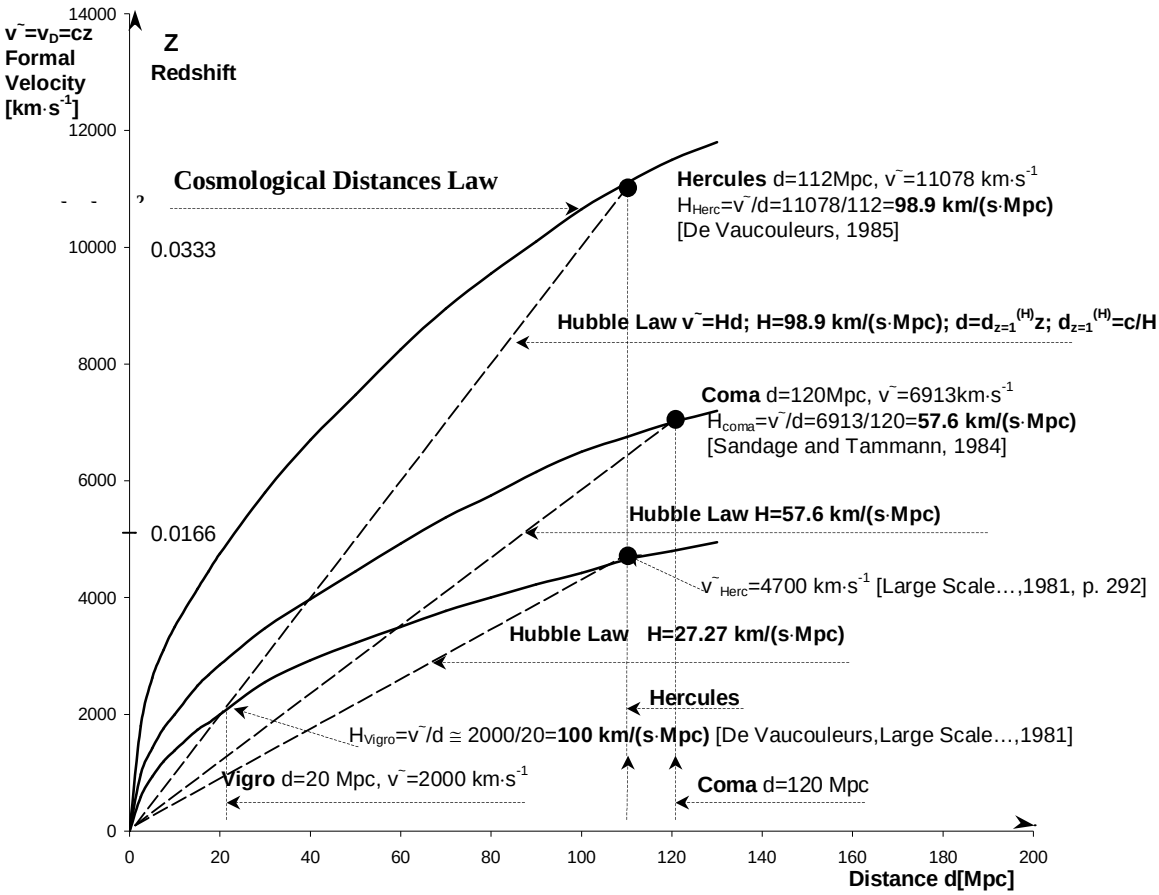
Fig. **HUBBLE LAW**

($d = d_{z=1}^{(H)}z$, $d_{z=1} = c/H$; $v^{\sim} = cz = Hd$)

AND COSMOLOGICAL DISTANCES LAW ($d = d_{z=1}z^2$)



COSMOLOGICAL DISTANCES LAW

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

Here d-cosmological distance,m-apparent magnetude of astronomical object(radiation source),R-radius of 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?)

$$d = d_{z=1} z^2 \ , \quad d_{z=1} = D \cdot 10^{m/5} R$$

INTERPRETATION OF OBSERVATIONAL INFORMATION

Initial Observational Data – Freedman et al. 2001, astro-ph/0012376

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INTERPRETATION OF OBSERVATIONAL INFORMATION

Initial Observational Data – Freedman et al. 2001, astro-ph/0012376
Arp H., 2001, astro-ph/0106466

Case γ ***= 1*** . For simplicity we shall be limited at first by a case $\gamma = 1$ (Sun- like stars with mass $M = M_\odot$).

Boundary H = 100 km·s^{-1}·Mpc^{-1}.

In this case we have a relation

$10^{m/5} = c/(\gamma\, d_{\odot Rz}\, H) = 299792.58$ км·s^{-1}/(0.280518 Mpc ·100 км·s^{-1}·Mpc^{-1}) = 10687.09,

m/5 = 4.0288,

and appropriate apparent magnetude m = 20.144.

Boundary HI=50 km·s^{-1}·Mpc^{-1}.

The calculations result the apparent magnetude m=21.649.

Case γ ***= 2.5*** (stars with mass $M = 2.5\, M_\odot$).

Boundary H = 100 km·s^{-1}·Mpc^{-1}.

Relation

$10^{m/5} = c/(\gamma\, d_{\odot Rz}\, H) = 299792.58$ км·s^{-1}/(2.5· 0.280518 Mpc ·100 км·s^{-1}·Mpc^{-1}) = 4274.84,

m/5 = 3.63 results the appropriate apparent magnetude m = 18.154

WAVE UNIVERSE CONCEPT

Many extremely important problems of Physics of the Universe and Cosmology, questions about relation between objects of micro and megaworld have the answers in framework of the **Wave Universe Concept** (see monograph-Chechelnitsky A.M.Extremum, Stability, Resonance in Astrodynamics and Cosmonautics,Mashinostrojenie,1980,312 p.and consequent publications;***http://arXiv.org/abs/physics/0102036***). WU Concept suggests that arbitrary systems not only of microworld,but and giant astronomical systems of megaworld possess by the general fundamental aspect(property)-all these dynamic systems,of principle,are the **WAVE** dynamic systems (WDS).If the Quantum Wave Mechanics describe the wave structure of microscopic scales objects,then the **Megaquantum Wave Astrodynamics** (see Chechelnitsky,1980-2002) analyze and emphasize the **MEGAWAVE** structure of giant astronomical systems-presence of waves and rhythms of large length and periods in these planetary and galaxies systems. The fundamental,of principle new approach argue its effectiveness in many Hot Points of Physics and Cosmology (see ***physics/0102036***)-from analysis and discovery of the mass spectrum of neutrino(***physics/0103066***) - to the redshift spectrum of extremely far quasars(***physics/0102089***).The true physical structure of the Universe at large scales can be understand only in context of the Wave Hierarchy,existence of very large astronomical objects,Unity and Universality of wave structure of arbitrary objects of the Universe(***physics/0102008***).