Paradox of Expansion Speed in Big-Bang Cosmology

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Abstract: This article reveals the application of optical comb technique which makes the scope and the precision of multi-wave sky patrol constantly increased in the big bang of current cosmographic observation and study. However, due to the limitation of the scope of multi-wave observation, the background radiation of neutrino is not yet detected currently. This article emphatically discusses the issues in expansion rate paradox that may appear in the current cosmographic study and proves the new and reasonable explanations theoretically to realize the important scientific significance for eliminating the logical paradox.
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1 Preface

In recent years, with the constant use of Hubble and multiple wave-band space telescope, the celestial bodies observed by people are more and more further, At present, the space telescope enjoying the furthest observing distance may enable people to observe the light sources 13 billion light-years away[1, 2 ,3], that is to say, a light cone located at a position more than 10 billion light-years away from the earth finally have its rays reaching the earth after undertaking a trip of more than 10 billion light-years. According to the principle of changelessness of light speed, when a space light reaches current time through ionization, the light-like interval space, space-time, and light transmission should be in a symmetrical linear relationship.

If the received light wave from over 10 billion light-years by far was electromagnetic wave radiating over 10 billion years ago, reaching the earth after a distance of over 10 billion light-years, and was received by people on the earth, then it suggests that the universe expands at light speed or dark energy with increasing density began to play an expanding and accelerating role 7 billion years after the universe came into being; besides, electromagnetic radiation, high energy universal radial and radiosource also play a medium role[4]. There is no space for expanding from the origin of the universe, so there is no synchronized and equivalent increasing distance for light transmission. The received cosmic microwave background radiation suggests that the speed of universe expanding is equal to that light speed is in direct proportion to radiation speed of blackbody: $\lim_{H \to C} R/T_U = h\upsilon = 1/\sqrt{\mu\varepsilon} = C$. Yunqiang Yu , a Chinese physical scientist, pointed out that during the period that the radiation mainly activates, heat moving speed of the heat dark matter particle is nearly the same as light speed, i.e. universal temperature fall is in direct proportion to expanding speed. If space-time effects of radiation electromagnetic wave exist after Big Bang expanding as velocity of light or super velocity of light, human beings cannot measure mixed background source accurately.

2 The study and the progress of observation in recent years

13.7billion years ago when quantum fluctuation (gaussian fluctuation):expansion of “singular point” generated time space , energy and quality [5], quark-gluon plasma , and then it diffused radiations in its decoupling epoch into the beam of light received by

human on the earth now, which is 13 billion light-years away from the earth. According to the data that the stellar, galaxy, quasar formed by the preliminary ionization [6] and visible light emitted in turn at a time lagging more than 380000 years, 0.2 billion years, 0.4 billion years, and 0.6 billion years respectively, there is a currently unobserved much further before the ionization ‘‘dark period” dark space[7,8], $w=1/(1/3 d_U+1)$. Therefore, the present visual range L_{h0} is not equal to the actually universal radius R[9]. The reasonable interpretations may be found as follows: Its reasonable explanation resorts to the relation existing in the speed and time of expanding, $H_0 \geq C$, namely: $R/T_u \geq 1$. In past 13.7 billion years, under precondition suppose that non-unlimited velocity instant expanding experienced in extreme initial moment $H=(8\pi GT_c^4/3)^{1/2}$ and the speed-down process after expanding were neglected and that velocity of universal Expanding transferred to initial velocity $H \leq C$ of classic universal Expanding, if according to calculation of even acceleration speed of latest present measured Hubble constant value[10] $H_0=69.7\pm4.95$km/s/MPC, universe has only expanded for about 7 billion light-years of space distance. That is $R/T_u \leq 1$. However, according to present calculation observed of universal radius that is over 4,000 times of MPC size of universal observation of about 14 billion light-years, in past 13.7 billion years, expanding velocity of extreme outer layer MPC space of universal expanding has reached 300 thousand km/s. Additionally, according to present observation of super new stars in far distance, radial velocity of universal expansion is accelerating. In past 13.7 billion years, expanding velocity of farthest MPC space of early universal expanding speed was even larger than 300 thousand km/s. $\lim R/T_U$,

$$H \to C$$

$\triangle t=0 \sim$ time ebound. This indicates that Hubble constant is correct and universal Expanding is of varying acceleration and VSL .$V=C/n\lambda^{-1}$.On the other hand, present definition of universal age accepted is incorrect [11].

In 2008, John Frege Et al, an American scientist, published a thesis in *Astrophysical Journal*. They discovered through the observation of “*Chandra*” X-ray telescope that the actual age of globular star cluster in the universe was younger than the age measured before. Webb, Australian scholar, found, in observation of action spectrum emitted by quasar 12 billion light-years distance away from earth, that in past 12 billion years, with regard to component of accurate structural constant $a=e^2/Ch$ of action spectrum, light velocity has reduced by 1/100000， Chiral symmetry breaking occurs.The nature of light is transition transmission of atomic radiations of specific energy state, that is, the secondary effect of atomic radiations, $Z_{Wif=|<f|i>|^2}=\triangle T_{1/\sqrt{2ct_R}}/T_0-1$.When one object in the university expands, the other may shrink. The time-space domain of each other is different. The time-space domain in different dimension changes asymmetrically[12]. Recently, it has been proved by some scholar(s) that Robertson-Walker metric is not in accordance with the additive-speed principle of Einstein’s General Theory. However, according to present main theory, the universe is of various directions in different location is isotropy[13] . Besides, with universal Expanding, decrease of density $\rho_1 \times V[Q(t_1)/Q(t_p)]^3=V_{\rho p}$ and degression of temperature $T_1=T_\rho(1+z_1)$, force of gravitation field reduces relatively (for example: Recently, Hubble Space Telescope found that unit gravitation mass of Pismis24 star cluster is reducing).

When the electromagnetic spectrum passes big mass orb causing continuous bending of curvature space, although angle deflection has reduced in certain degree, all passages are still flexual [14]. Steadiness of light velocity will cause time detention effects that have been validated by the relativity theory when light passes big mass orb. Thus, comparing with world line that transmits as light velocity along geodesic line and can penetrate neutrino(the speed of neutrino is in inverse proportion to the number of the particles it passed through, whereas the neutrino mass is in proportion to the particles it passed through) of several light-years lead bulwark, although light velocity of world line of light keeps steady, it is not extreme of speed any more with same perpendicular distance, same distance, even speed movement in unit time and movement distance. That is $\triangle t=\int_a^b \sqrt{1+[f'(x)]^2}\,dx/C-L/C$. $\delta S=0$.If. Decay oscillation of neutrino involved in weak force suffers no restriction of curved space. In 1987, Japan’s kamiokande II detector and America’s IMB test discovered the neutrino of supernova SN1987a, 3 hours earlier than the light ray coming to Earth. Neutrino is weightless，$C(t)$--$v(t)=\int_a^b \sqrt{1+[f'(x)]^2}\,dx/C-L/V=\triangle t=3$ *hours* . The study shows that the nonparticipation essence of neutrino is the mapping effect of mass pressure and density pressure, and can transform the velocity of light, where the numerical value is equivalent to the “gravitational interaction”, 10^{-36} times more than the magnetic-field strength. The neutrino that is in phase transition of oscillation is actually agravic, not taking the orbit of the curving space network. As the massless quantum, the neutrino only takes the tunnel with the shortest penetration traveling line. The neutrino is characterized by the transient motion of super velocity of light. The cooled neutrino is an important component of dark energy. Neutrinoes drag the adelomorphous space at

superluminal speed and make it expand, which results in symmetry breaking of space-time. In diluted and supercooled airspace that results from expanding superluminally, there is the possibility of neutrino stars. The speed of neutrino is in inverse proportion to the number of the particles it passed through, whereas the neutrino mass is in proportion to the particles it passed through [15]. universal expanding speed is slower than light velocity, light propagation is of topological super space, or time is slow, or photon and gravitation wave transmitting as light velocity are closed even on expansion film of space-time interface; if universal expanding speed is equal with or faster than light velocity, according to special relativity theory of Einstein that light velocity is speed extreme of about 300 thousand km/s, when moving object reaches extreme of light velocity along moving direction, Lorentz shrinking effects will occur. That is $L=L_0\sqrt{1-V^2/C^2}$. Universe cannot expand at light speed or super light speed. On the contrary, universal space only will become smaller and smaller. Therefore, either universe expands at extreme speed and time difference of light radiation is longer than expected, or object-moving speed can reach or exceed light velocity.

3 New observational discovery and the discussion of problem

Redshift rate of one OQ172 quasar observed in early period of space was $Z=\triangle\lambda/\lambda_0\approx3.53$. Given that Hubble constant value at present is $69.7Km\bullet s^{-1}\bullet MPC^{-1}$, from calculation of $d_L=C[R_0/R(t_1)-1]/H_0$, its moving back speed is 0.91C 14 billion light-years away from earth, regarding the Lorentz factor is about 400. According to shrinking effects, shrinking rate of this quasar will exceed 50%. In universal belt with high-speed Expanding and shrinkage(oscillation), it is able to observe transference phenomenon of red and purple of action spectrum shock wave. Furthermore, at present, if universal accelerating expanding measured by remote high redshift supernova spectrum is endless[16], expanding speed of universe that present $\Omega_0=\rho_0/\rho_c<1$ is lower than its critical density, which is determined by dark energy [17], will reach theoretical value of light velocity sooner or later[18] . When expanding speed reaches that of gravitation force, orb will escape by following expanding space after breaking from gravitation. R-W metric describes three different kinds of cosmoses, and they can be identified through valuing κ as positive, zero or minus, P=wρ. And the three types comprise of all the theoretic possibilities; naturally, the cosmos is one of them. Besides, Suskind, Fieseler and Pabun, American physical scientists, also considers: if universe with accelerating expanding reaches extreme of light velocity with limiting constant, it will be embraced by eyeshot; particle existing as S matrix arrangement in endlessly far place relied by superstring theory [19] outside eyeshot cannot be observed .

For the past few years, after analyzing the infrared stellar map shot by NASA and remained data, Alexander·Kashsrinky, an astrophysicist of NASA Goddard Space Flight Center and his colleagues got a conclusion that stars in Galactic System were formed 10 billion years ago at tremendous speed more than 1000 times quicker than the formation speed of current stars in Galactic System; that is to say, 10 billion years ago, in Galactic System, the original star generate time of the mass of the sun can be formulated as $t=V/2L=GM^2/2RL<10^7a$. In recent years, Evans, a British astronomer discovered through research that during 6 billion years, number of new stars born in the universe was less than number of dead stars and the universe was getting darker. Recently, it was discovered through Hubble orbiting telescope that the formation speed of stars in more than 500 dwarf galaxies that formed in early age of the universe is 10 times quicker than that of the former stars of galaxies known in the past. Research shows that a main causation for the difference of formation speed of stars is the difference of the interstellar pressure around stars. Lately, the "apartheid" phenomenon proved by observation of the 47th globular star cluster of Tucana in Galactic System observed through Hubble orbiting telescope illuminates that distribution of mass of stars is in compliance with spiral gradients of the interstellar pressure that are equivalent to the gravitation trap. Electromagnetic effect of pressure of the gravitational field influences lives of stars. These observed data indicate that intensity of the gravitational field of the universe has been weakening since formation of galaxies, formation speed of stars as the second generation is getting slower. In the past, astronomers believed that external galaxy redshift is a pure optical distance redshift which is caused by Doppler Effect, but recent astronomy circle can not interpret the phenomenon that accelerated external galaxy redshift, as well as observed spectroscopic redshift value in the middle of external galaxy is less than edge value with the mechanism of Doppler uniform motion distance effect. According to Doppler Effect, the distance of central and edge external galaxy is the same, thus they should present a same redshift value, that is: $Z_{center}=Z_{edge}=[(1+v/c)/(1-r^2/c^2)^{1/2}]-1$. In addition, according to recent observation, fibrous system of crab nebula is now inflating at a velocity of 1200km/s, which explains that at the same observation range, small density celestial body has a high inflation velocity and a high redshift value, namely $Z_{center}=G_{center}M/C^2R < Z_{edge}=G_{edge}M/C^2R$ (or the inverse doppler effect) [20]. In accordance with the formula of inflation speed of the universe: $H(t)=\dot{R}(t)/R(t)$, gravitational potential energy

among celestial bodies had been weakening. This is conforms to the phenomenon observed by Holland-born American astronomer Marteen Schmidt that redshift is proportional to recession velocity.

America's Chandra X-ray Space Telescope and Compton gamma-ray observer show in the latest observational study that annihilation isn't detected in Bullet Cluster [21]. This may indicate that the number of annihilated particles is at random due to the collision of positive and negative substances in the primary cosmos and the probability is unsymmetrical. Or the collision [22]of black holes with the maximum energy and the hit and removal of black holes compress and heat up the substantial plasma body with magnetic field thereby generated to form the quasar explosion; the particle structure is reversed with mirror into antiparticle[23] and negative baryon = antimatter[24]. This may indicate that the CP symmetrical breaking from BSU to BAU has never happened in the primary cosmos. The cosmos is actually made of positive substances. The study shows that the quasar burst can activate, oscillate and decay the neutrino particles in the black hole with the supercritical high-temperature and high-frequency medium. The quasar wind that has the superconductive and superluminal quantum magnetic field can shield the radiations like the dark matter—gravitational wave in the boundary and change it into ordinary matter. Galaxy has black hole, but it doesn't always have bulge. Galaxy bulge exists in galaxy which is at steady period and in whose center there is black hole. If galaxy has bulge, it must have black hole. Galaxy which is at steady period only has corresponding bulge. Bulge may be balanceable lever of galactic rotation and rotation of black hole. Mass of bulge can exceed mass of black hole only when amalgamative galaxies evolve for generations to adult stage through combination of bulge among galaxies and dormancy of black hole in amalgamative galaxies.

Hence, theoretically, $H_0 > C$, $H_0 < C$, provided for solving problems of particle eyeshot in Big Bang cosmology of modern standard universal model and keeping consistency of physical condition after expansion and decelerating process of decelerating parameter q_0=-0.47 experienced after expanding for forming star, galaxy, quasar and universal "Reheat" process; Present Hubble constant value measure (H_0=69.7±4.95km/s/MPC); as for paradox problem existing between that light transmitting speed is invariable and principle(C=0.3millionkm/s) that light velocity is speed extreme, the present reasonable standard explanation for these is: universal expanding is of super light velocity, otherwise vacuum status has persisted for 10^{-33}s. Measure factor R of universal physical proper unit has increased 10^{43} times that is more than multiple of expanding in 10 billion years since time of Planck and is equal to quantity of diameter λ of expansion of standard universal model. Super light velocity expanding makes no cause and effect relation between observation of universal super "Event" eyeshot and observation of each part inside universe. In stage of sudden expanding with vacuum and sudden descend with density and temperature; there will be difficulty of latent heat of phase change with radiation of vacuum recovery and of cleanout of original gas. When falling to $T_c > T$, $\rho_{vac} \approx T_c^4 > \rho_\gamma \approx T^4$, temperature enters over-cold status of background and its descend will cause disturbance, energy agglomeration and particle "Gelation". Among different vacuum with same scale, when particle goes through from one vacuum to another adjacent vacuum, variation of baryon number is ΔB=3. Variation of baryon number is fulfilled through tunnel effect. When temperature is relatively low, tunnel effect may limit production of needed baryon number. Information of Quantum tangle effect of Quantum tunnel effect descending from $T_c < T$ to $T_c > T$ is interrupted [25] . Universal Φ field will have difficulty of transition probability of energy increase and inspiration of physical vacuum spontaneous symmetrical broken vacuum phase variation from$\Phi=0$ to $\Phi=\Phi_0$. Metastable fake vacuum energy is hard to be transformed into energy of other fields by reconnection, and hard to make other fields produce field quanta through stimulation, and hard to make universe reheat to even temperature status and recover normal status of radiation, and also hard to fulfill transformation from quanta universe [26] to classic universe.

The research indicates that vacuum or field maybe a macro & micro critical state of mass energy phase transition. For all of these, it is to face relating problems that how to explain disturbance source with different size, temperature fluctuation disturbance spectrum initial condition with same disturbance amplitude δ_K and initial value of seeds needed by forming structure and how spectrum without relation with size of practicality with same strength eyeshot becomes disturbance amplitude of sub-eyeshot in beginning moment and later; effect of damp caused by expansion to decrease of evolvement and enhancement rate of small disturbance; speed of enhancement of minimum disturbance amplitude $\delta T/T_0 > 1\times10^{-6}$ in positive density disturbance zone caused by instability of gravitation; How the composition only with a gravity induction, which accounting for 30% in the non-baryon, forms, and how the large-size structure goes with the logical relation and system of evolvement, and other related problems. Or universe is of various directions in different Location is anisotropy[27], or received universal microwave background radiation is far less than present 2.7K or it is even unable to receive

cosmic microwave polarization. In 2007, Lawrence Ludnichol, an American astronomer, and his colleagues, by utilizing the ratio astronomical observation platform throughout America and the observation data of the WMAP detector, studied and discovered an central axis symmetrical to the observed radius and the enormous hole with the diameter about one billion light-years. The temperature in this cooling zone is less than the average temperature of the microwave background radiation of the universe [28]. or in period of practicality, ellipse universe shape is uneven and universal medium expands with size factor. Critical wavelength $\lambda_J = (\pi v_s^2/G\rho_0)^{1/2}$ with small disturbance of initial density and temperature fluctuation occurs and causes density fluctuation. When $\omega^2=V_s^2K^2-4\pi G\rho_0=a+bi$, $b\neq0$, instability of gravitation causes enhancement of uneven amplitude of density.

4 Conclusion

If it is assumed that light velocity is the upper limit of velocity, currently the maximum observation radius of the expanding universe should be smaller than or equal to the scale of 13.7 billion light-years, unless superluminal motion exists in the universe. At present, observation record and main theory of universal age indicates that universe is expanding as average speed of V≥0.95C. Recently, scientists of Australian National University have found that the observable universe contains 30 times (S = 30 times) more entropy than originally estimated, and its speed of energy consumption is 30 times faster than previously forecasted, presenting an increasing growth of the entropy. Or it is dispersion of Hubble constant, even now, in case measuring the distant universe in different kinds of ways, there will be large differences, therefore the corresponding regulated Hubble constant is still rather dispersed; or it is that practical age of universe should be much older that present age cognized, the larger of the Ω_λ the longer of the predicted age of cosmos; consequently, in case the actually measured age is found beyond the theoretic age predicted by the standard model, which shall be the sign that the cosmos constant is more than zero; or it is that transmitting speed of electromagnetic wave is various; or it is the early universe, so the spin of photon may be different from the present photon : $N_{\gamma s=1}[\pm(\sqrt{2})(h/2\pi(H(t)\cdot C^{-1}/\triangle E_\gamma))]^{-T2}$; or in past 13.7 billion years, due to track passed by clarity light in early time of universe is continuous curve or gravitation lens effect[29]. Now, path of short-range line of farthest light source received is only 13 billion light-years (1100 times). The cosmic expansion reduces the gravitational force, as a result of which the expansion of observable dimensionality accelerates, while the unobserved dimensionality contracts. Or does not exist the cosmological constant and dark energy [30]. Or that universe is in a correlated circulation with Λ as a cycle[31, 32 , 33 , 34] .

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