Chapter 13

Applying CFLE Theory to the Cosmos

13.1 Predicted Cosmos Mass by the Standard Model

According to NASA's latest WMAP observation, the expansions speed of the cosmos is

$V = 7.1 \times 10^4$ m/s 13-1-1

The age of the cosmos is

$A = 1.380 \times 10^{10}$ light years 13-1-2

By factor of 0.046 % of ordinary matter by WMAP, and related force line curve is $g = 4.663$ and permittivity factor Q_e =4.663×0.000589=0.003, x_e =1.003.

The related radius of the cosmos according to Eq.11-15-6 is

$R_{\mathbb{U}} = 1.295 \times 10^{26}$ m

The real value calculated is

$R_{\mathbb{U}} = (1.295 \times 10^{26}\ \text{m})\ (82.97) = 1.075 \times 10^{28}$ m 11-16-5

where 82.97 come from Eq 11-16-5 as horizon factor.

The observed mass (ordinary) density of the present universe (cf. §7.9) is

$\rho = 3.1 \times 10^{-31}$ g/cm^3 13-1-3

The mass of this sphere is

$M_{\mathbb{U}} = \frac{4}{3}\pi\ R_{\mathbb{U}}^3\ \rho$

$= \frac{4}{3}\pi\ (1.075 \times 10^{28}\ \text{m})^3\ (3.1 \times 10^{-31}\ \text{g/cm}^3)$

$= 1.613 \times 10^{54}$ kg 13-1-4

For factor of $1.48\ 5 \times 10^{-27}$ is used $G = 6.673838 \times 10^{-11}$ $\text{m}^2\cdot\text{mkg/s}^2\cdot\text{kg}^2$ from Eq.10-5-13

This mass observed by dark factor of $g = 8.388$ is

$$M_{\mathbb{U}} = \frac{1.613\times10^{54}kg}{8.388} = 1.923 \times 10^{53}kg$$

where 8.388 is $g = 8$ and $x_g = 1.048$

$$Q = (0.000589)(8 \times 1.202) = 0.006$$

$Q = (0.006)(8)$=0.048, $x_g = 1.048$

Related electromagnetic event horizon of universe is

$R_{\mathbb{se}}$ =$(1.485 \times 10^{-27})(1.923\times 10^{53}kg)$

$= 1.295 \times 10^{26}m$ 13-1-5

However, there is not enough galactic force to build a unified gravitational system with such mass. This is because (as discussed in §11) the maximum gravitational system that a galactic force can build is only

$M_{\mathbb{U}}$ = $(1.409 \times 10^{44}$ kg) (2027)

$= 2.856 \times 10^{47}$ kg 13-1-6

Therefore, we can find here that in order to build such a huge gravitational system, another strong force is needed.

13.2 Introduction of the Cosmic Force with Its Cosmic Force Lines and Cosmic Force Line Elements by CFLE Theory

Based on the conclusion in §13.1, in order to observe the cosmic system, we have to introduce a cosmic force with its cosmic force lines and its force line elements (see Figure 13-2-1). Because the galactic force is $F_{\otimes} = 5.704645 \times 10^{70}\ F$

and the quantum charge constant is $N = 1.190208 \times 10^7$, the cosmic force strength obtained is

$$F_{\Cup} = (5.704645 \times 10^{70})\,(1.190208 \times 10^7)^2$$

$$= 8.081172 \times 10^{84} \qquad 13\text{-}2\text{-}1$$

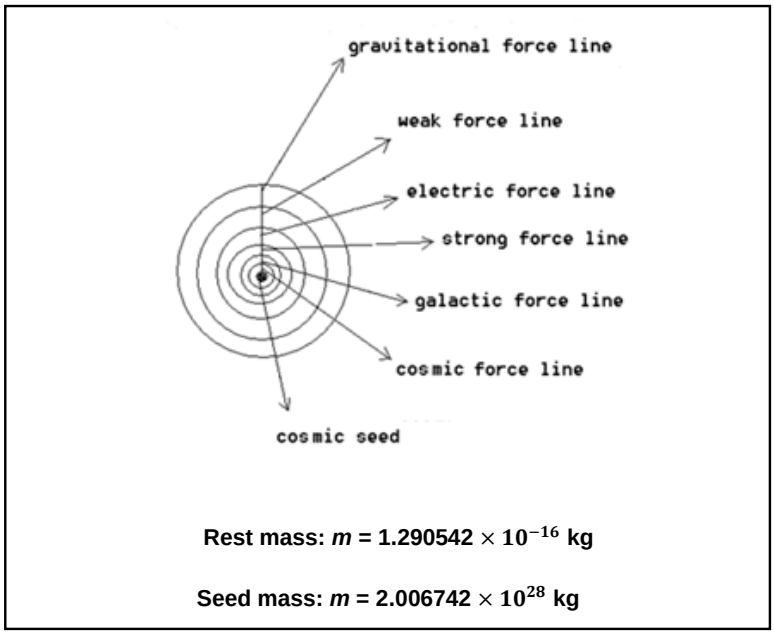


Figure 13-2-1. ±Cosmotron

The fundamental particles of the cosmic force are as follows.

The cosmic fundamental particle is called the cosmotron (taken from the name electron) and its complex particle is called the cosmoton (from the name proton). Together, the cosmotron and cosmoton build one system called the cosmotom (from the name atom) and this cosmotom builds a system like the atomic element, called a cosmotomic element. Gauge boson that is build with cosmic force line, is called cosmoson.

13.3 Quantized Unit Mass of the Universe by CFLE Theory

In §11-4,the quantized unit mass of the galaxy $M_{\otimes}$ was calculated to be

$$M_{\otimes} = 1.408528 \times 10^{44}\ \text{kg} \qquad 13\text{-}3\text{-}1$$

Because the force quantum constant is $N = (1.190208 \times 10^7)^2 = 1.416595 \times 10^{14}$, the unit mass of the cosmos is

$$M_{\Cup} = (1.408528 \times 10^{44}\ \text{kg})\ (1.416595 \times 10^{14})$$

$$= 1.995314 \times 10^{58}\ \text{kg} \qquad 13\text{-}3\text{-}2$$

The mass difference between the obtained $M_{\Cup} = 1.613 \times 10^{54}$ kg in E.q13-1-4 and this value is

$$d_m = \frac{1.995 \times 10^{58}\ \text{kg}}{1.613 \times 10^{54}\ \text{kg}}$$

$$= 1.237 \times 10^4 \qquad 13\text{-}3\text{-}3$$

This difference is essentially the 6 kind of force line curve of dark factor at $g_{\Cup d} = 4.663$ (cf. § 7, § 11.16, dark matter) with keplerian missing factor $f_k = 1.202$.

$$g^6 = (4.663)^6\ (1.202) = 1.236 \times 10^4 \qquad 13\text{-}3\text{-}4$$

Two value agree quite well

In §11-6 mentioned factor of galaxy dark matter by mass-luminosity relation .

$$g^3 = (5.976)^3 = 213.4 \qquad 11\text{-}6\text{-}1$$

Result is

$$\frac{\rho_o}{\rho_\otimes} = \frac{1}{213.4} = 0.0047 \qquad 11\text{-}6\text{-}2$$

However, because of keperian missing factor $f_k = 1.202$ and permittivity factor x_i effective curve is

$$g_{kmf} = \frac{5.976}{1.202} = 4.971 \qquad 11\text{-}6\text{-}3$$

$$g^3 = (4.971)^3 = 122.8 \qquad 11\text{-}6\text{-}4$$

Expected value is

$$\frac{\rho_o}{\rho_\otimes} = \frac{1}{122.8} = 0.0081 \qquad 11\text{-}6\text{-}5$$

Observed value by mass-luminosity relation from the Sun is

$$\rho_{\otimes observe} = 0.0088 \pm 0.002 M_\odot pc^{-3} \qquad 11\text{-}6\text{-}6$$

For dark matter of galaxy is calculated

$$\frac{\rho_o}{\rho_\otimes} = \frac{1}{280.494} = 0.003565 \qquad 11\text{-}6\text{-}7$$

Related factor of pure cosmic dark matter by g = 6.545979 is

$$\frac{1}{1836.11} = 0.000545 \qquad 13\text{-}3\text{-}5$$

This means that CP violation of universe and Proton is 0.000545

When observer use by mass-relation by g= 5.976, it is expected as

$$\frac{1}{1275.39} = 0.00078 \qquad 13\text{-}3\text{-}6$$

13.4 Quantized Cosmos Size by CFLE Theory

In §11, the obtained galaxy size was

$$R_\otimes = 4.931 \times 10^{22} \text{ m} \qquad 13\text{-}4\text{-}1$$

Because the cosmic force is $N^2 = (1.190208 \times 10^7)^2$ times stronger than the galactic force, the quantized cosmos size becomes

$$R_\Cup = (4.931 \times 10^{22} \text{ m})\ (1.417 \times 10^{14})$$

$$= 6.987 \times 10^{36} \text{ m} \qquad 13\text{-}4\text{-}2$$

This size is only charge radius of universe, not radius of all universes.

This size is real size of universe, nevertheless calculated observable universe is

$$R_\Cup = 1.295 \times 10^{26} \text{ m}$$

This size of universe is smaller than event horizon of universe from Eq13-1-6

$$R_{\mathbb{e}} = 2.395 \times 10^{27} m \qquad 13\text{-}4\text{-}3$$

Meaning full difference between two values is

$$d_{R_{\mathbb{u}}} = \frac{6.978 \times 10^{36} m}{1.295 \times 10^{26} m} = 5.388 \times 10^{10} \qquad 13\text{-}4\text{-}4$$

Therefore, this factor is called minimum maxwellian missing factor or minimum cosmoson factor.

13.5 Obtaining the Age of the Cosmos and Hubble's Constant by CFLE Theory

According to the size of the cosmos ($R_{\mathbb{U}}$ = 6.987 × 10^{36} m), the age of the cosmos is

$$T = \frac{6.987 \times 10^{36}\ \mathrm{m}}{2.998 \times 10^{8}\ \mathrm{m/s}}$$

$$= 2.331 \times 10^{28}\ \mathrm{s} = \frac{2.331 \times 10^{28}\ \mathrm{s}}{3.156 \times 10^{7}\ \mathrm{s}}$$

$$= 7.386 \times 10^{20} \text{ light years} \qquad 13\text{-}5\text{-}1$$

This age is final age of cosmos by factor of minimum maxwellian missing factor or minimum cosmic cosmoson factor.

This value agrees very well with the value of Eq. 11-15-7, also calculated to be $\tau_{\mathbb{u}}$ = 7.386 × 10^{20} light years.

Because the expected Hubble constant is

$$H_{\mathbb{U}} = \frac{1}{\tau_{\mathbb{U}}} = \frac{1}{2.331 \times 10^{28}\ \mathrm{s}}$$

$$= 4.290 \times 10^{-29} \text{ km/s·Mpc} \qquad 13\text{-}5\text{-}2$$

the related expansions speed is

$$V_{\mathbb{U}} = H_{\mathbb{U}} \cdot D_{\mathbb{U}} = (4.290 \times 10^{-29} \text{ km/s·Mpc})\ (3.086 \times 10^{22} \text{ m})$$

$= 1.324 \times 10^{-6}$ m/s 13-5-3

The observed value by NASA's WMAP is

$V_{\text{WMAP}} = 7.1 \times 10^4$ m/s 13-5-4

Effective value by related permittivity is

$V_{eff} = (7.1\times\ 10^4\ \text{m/s})(1.005) = 7.134 \times\ 10^4\ \text{m/s}$

$Q_e = 0.000589 \times (8) = 0.005712$

$x_e = 1.005$

The difference of two values is

$$\frac{V_{\text{WMAP}}}{V_{\mathbb{U}}} = \frac{7.134 \times 10^4\ \text{m/s}}{1.324 \times 10^{-6}\ \text{m/s}}$$

$= 5.388 \times 10^{10}$ 13-5-5

This difference is minimum maxwellian missing factor or minimum cosmic cosmoson factor.

This difference is a serious contradiction. However, we only need to clarify the quantitative reasoning in this chapter.

13.6 No Cosmic Inflation, Wrong General Relativity and Right Solution of Horizon Problem by CFLE theory

Hubble observed that the distances to faraway galaxies were strongly correlated with their red shifts. This was interpreted to mean that all distant galaxies and clusters are receding away from our vantage point with an apparent velocity proportional to their distance: that is, the farther they are, the faster they move away from us, regardless of direction. Assuming the Copernican principle**,** the only remaining interpretation is that all observable regions of the universe are receding from all others. Since we know that the distance between galaxies increases today, it must mean that in the past galaxies were closer together. This point is called big bang singularity. According to general relativity, a singularity is a place that objects or light rays can reach in a finite time where the curvature becomes infinite, or space-time stops being a manifold. According to The Penrose–Hawking singularity theorems, singularities can be found in all the black-hole spacetimes,

the Schwarzschild metric, the Reissner–Nordström metric, the Kerr metric and the Kerr–Newman metric and in all cosmological solutions which don't have a scalar field energy or a cosmological constant.

However, for big bang to start infinite curvature of space time must be perfect flat as

$$E = mR^2(\frac{1}{2}H^2 - \frac{4}{3}\pi\rho G) \qquad 7\text{-}9\text{-}4$$

$$\frac{1}{2}H^2 = \frac{4}{3}\pi\rho G \qquad 7\text{-}9\text{-}5$$

If space-time were little positive curved, short time after big bang should be collapsed universe and negative curved should be fast expanded without any cosmic structure (galaxies, stars...).

These simple results indicate that general relativity must be wrong physically and principally, because general relativity cannot permit flat space-time from infinite curvature of space-time by cosmic singularity.

However, for such contradiction to resolve, scientists made up cosmic inflation by Friedman equation as

$$(\frac{\dot{a}}{a})^2 - \frac{8\pi G}{3}\rho = -\frac{k}{a^2} \qquad 13\text{-}6\text{-}1$$

$$k \approx 0, \rho = constant \qquad 13\text{-}6\text{-}2$$

$$[\frac{1}{a}\frac{da}{dt}]^2 = \frac{8\pi G}{3}\rho \equiv H_i^2 \qquad 13\text{-}6\text{-}3$$

$$\frac{da}{a} = H_i dt \qquad 13\text{-}6\text{-}4$$

$$a(t) \sim e^{H_i t} \qquad 13\text{-}6\text{-}5$$

where a is scale factor, k is curvature, $H$is Hubble constant.

A key requirement is that inflation must continue long enough to produce the present observable universe from a single, small inflationary Hubble volume. This is necessary to ensure that the Universe appears flat, homogeneous and isotropic at the largest observable scales. This requirement is generally thought to be satisfied if the Universe expanded by a factor of at least 10^{26} during inflation.

In other word, needed value for flat expansion should be

$$N = ln\frac{a(t_f)}{a(t_i)} = \int_{t_i}^{t_f} H(t)dt \qquad 13\text{-}6\text{-}6$$

Because Planck time is

$$T_p = \sqrt{\frac{\hbar G}{c^5}} \approx 5.39106(32)\times 10^{-44}s \qquad 13\text{-}6\text{-}7$$

needed N value can be make up for flatness problem to solve

$$13.8 \text{ byrs} \sim 10^{17}sec = (10^{-43}sec) \times N \qquad 13\text{-}6\text{-}8$$

$$N \geq 60 \qquad 13\text{-}6\text{-}9$$

Therefore other values should be

$$e^{H\Delta t} = e^{60} \approx 10^{26} \qquad 13\text{-}6\text{-}10$$

$$\Delta t \sim 10^{-32}sec,\ H^{-1} \sim 10^{-34}sec \qquad 13\text{-}6\text{-}11$$

This cosmic inflation is depicted as

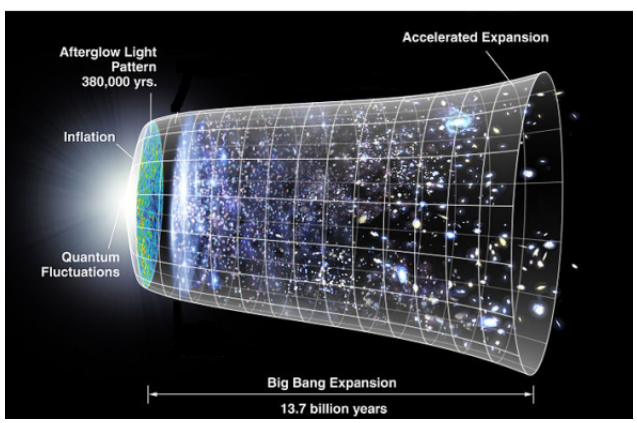


Figure 13-6-1

There can be evidence for a slight deviation from scale invariance. The *spectral index*, n_s is equal to one for a scale-invariant spectrum.

That is

$$P_s(k) = A_s(\frac{k}{k_0})^{n_s-1} \text{ (scalar perturbation)} \qquad 13\text{-}6\text{-}12$$

$P_r(k) = A_r(\frac{k}{k_0})^{n_r}$ (tensor perturbation) 13-6-13

The simplest inflation models predict that this quantity is between 0.92 and 0.98.From WMAP data it can be inferred that $n_s = 0.963 \pm 0.012$, implying that it differs from one at the level of two standard deviations (2σ). Scientists believe that this is considered an important confirmation of the theory of inflation.

However, according to quantum gravity of CFLE theory such cosmic inflation is impossible, because without charge screening for each forces(strongomagnetic, electromagnetic, weakomagnetic, gravito-magnetic) cannot separate all at ones by charge quantization interval constant $N = 1.190208 \times 10^7$. Without separated 4 forces cannot build baryon structure and related baryon genesis as today we can observe. Because charge screening by each force total kinetic energy by each force for expansion cannot increase as much as total volume increase $N^4 = (1.190208 \times 10^7)^4 \sim 10^{28}$ by each force. Therefore constant energy density $\rho = constant$ with space time curvature $k \approx 0$, as Eq 13-6-2, cannot give as condition of cosmic inflation.

This means that existence of Einstein's cosmological constant and cosmic inflation is impossible.

With this clear proposition we can solve flatness problem.

That is

• space –time of universe is not curved.

• universe is not started from relativistic singularity.

•observed flatness of universe by WMAP and Planck is direct evidence that Einstein's general relativity is wrong.

• figure 13-6-1 is alternated figure 13-6-2

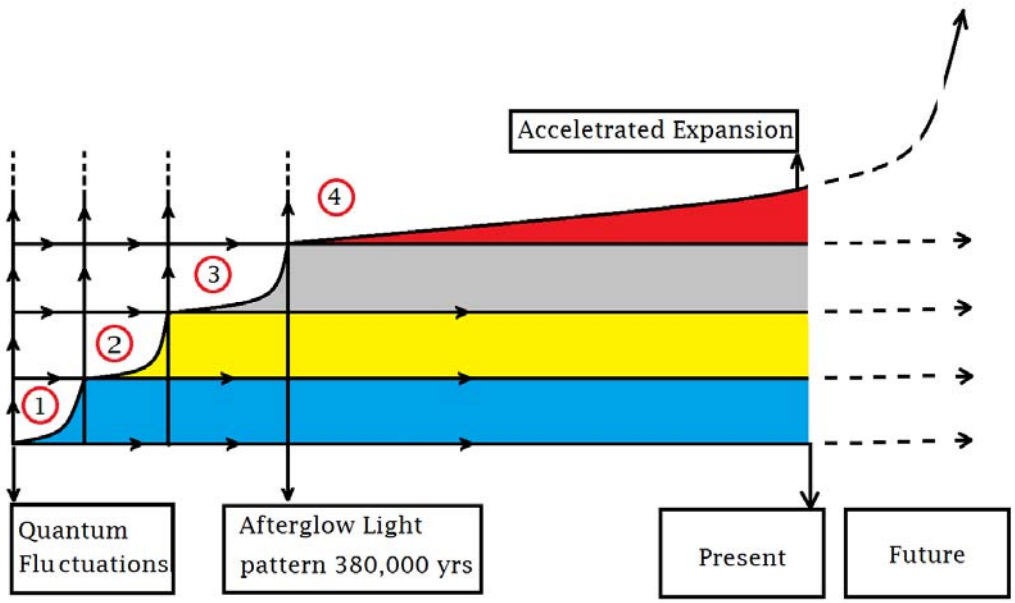


Figure 13-6-2

Process ① is quantized accelerated expansion by ±strongomagnetic force by force interval constant $N = 1.190208 \times 10^7$.

Process ② is quantized accelerating expansion by ±electromagnetic force by force by force interval constant $N = 1.190208 \times 10^7$.

Process ③ is quantized accelerating expansion by ±weakomagnetic force by force by force interval constant $N = 1.190208 \times 10^7$.

Just after this quantized phase ③ occurred 380,000 yrs after beginning .

Process ④ is quantized accelerating expansion by ±gravitomagnetic force by force interval constant $N = 1.190208 \times 10^7$. Rate of this gravitational accelerating expansion is almost flat, but from 5×10^9 yrs ago expansion late is changed exponentially.

Why different regions of the universe have not "contacted" each other because of the great distances between them, but nevertheless they have the same temperature and other physical properties. This should not be possible, given that the transfer of information (or energy, heat, etc.) can occur, at most, at the speed of light as so called horizon problem. By CFLE theory horizon problem is solved simply.

Answer is that Einstein's relativity is wrong. Therefore in CFLE theory,

speed of cosmotromagnetic gauge boson(cf.§13.15) of cosmotromagnetic force can be

$$c_{cosmoson} = 5.819706 \times 10^{24} ms^{-1} \qquad 13\text{-}15\text{-}5$$

and speed of galactroromagnetic gauge boson(cf. §11.18) of galactromagnetic force can be

$$c_{galaxon} = 4.889655 \times 10^{17} ms^{-1} \qquad 11\text{-}18\text{-}2\text{-}3$$

Such faster gauge boson's speeds are not speed of electromagnetic gauge boson. Under such faster gauge boson's speeds cannot occur horizon problem, because every point of universe in size of $10^{26}m$ can exchange physical information.

13.7 Basic Structure of the Universe by CFLE Theory

In §12, CFLE theory asserted that "somewhere in the space of the universe was a lump of mass that started the Big-Bang" and therefore it was easy to explain the basic structure of the universe and calculate the basic mechanism of expansion. So far, CFLE theory has used the quantum mechanical model as the basic model. The mass of the universe was obtained from the proton mass, and the size of the universe was obtained from the charge distribution radius of the proton. Therefore, to obtain the basic structure of the universe, CFLE theory uses the quantum mechanical structure of an atom as the basic model of the universe. This means that, in CFLE theory, there is no "spacesism" and unlimited relativism. Namely, in the universe, there are central nuclei (as quantum center points; cf. §18,§24), and around each nucleus there are material structures that according to the orbital function of the universe act as huge wave packets. Therefore, the shape of the probability density function of an electron can be applied as the shape of the probability density function of the universe.

Figure 13-7-1 depicts the expected shape of the probability density function of the universe overall.

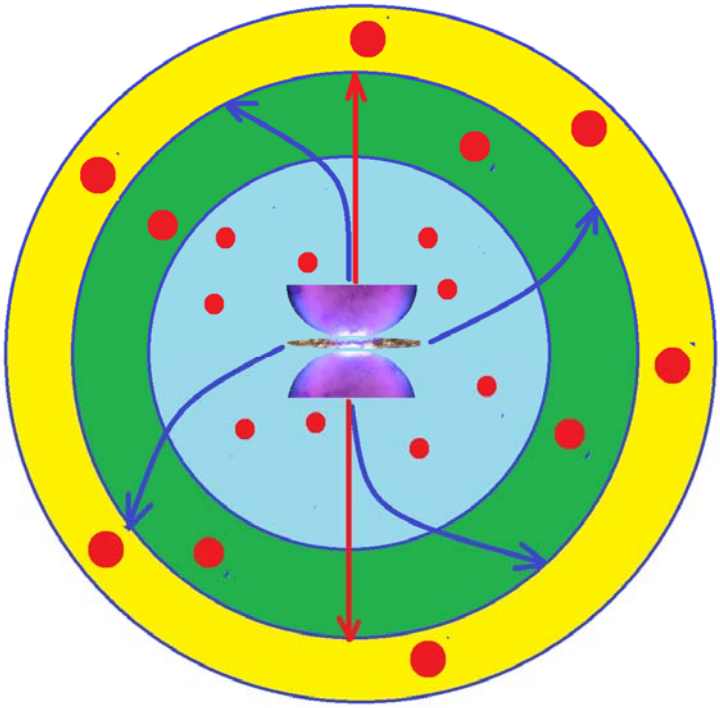


Figure 13-7-1

Figure 13-7-2 shows the expected shape of the probability density function of a cosmic halo.

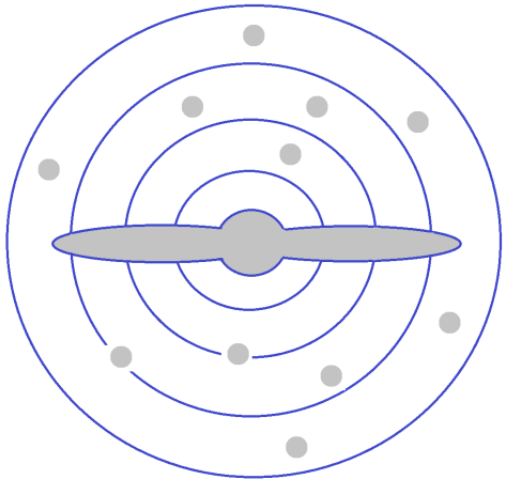


Figure 13-7-2

If we could zoom in on the cosmic halo, the expected structure of void would be as shown in Figure 13-7-3.

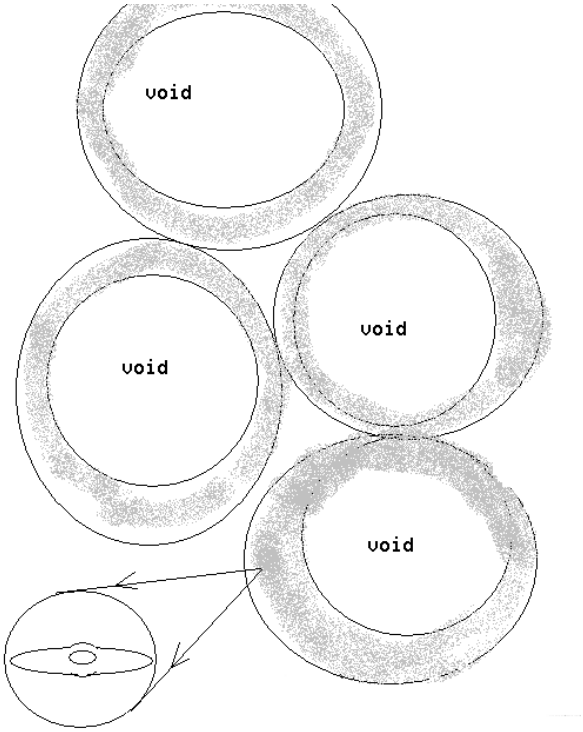
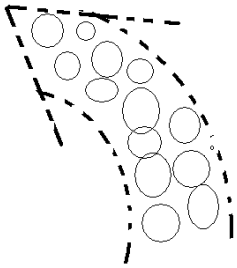


Figure 13-7-3

Figures 13-7-4 and 13-7-5 zoom in around the spiral arm, giving the expected topographical structure of 13-7-4 is called band filament.

Figure 13-7-4



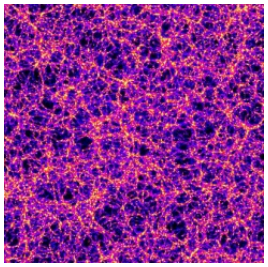


Figure 13-7-5

With this concept, we can explain the observed topographical bubble structure of the universe (see Figure 13-7-6).

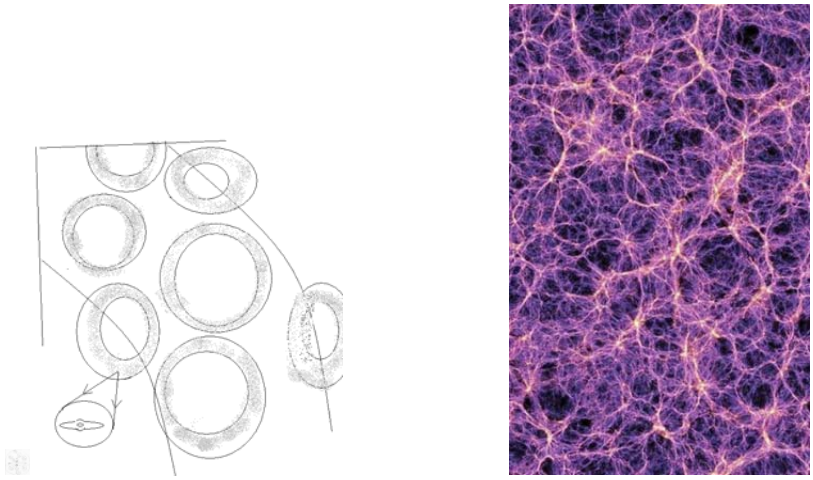


Figure 13-7-6

13.8 Macro Energy Quantum $\hbar_{\Cup}$ of the Cosmos and Its Meaning

In §11.16, the macro energy quantum of the atomic universe was calculated to be

$$\hbar_{\Cup} = 1.080616 \times 10^{77} \text{ Js} \qquad 13\text{-}8\text{-}1$$

This macro energy quantum can bring out some useful information of other calculations. For example, the value of the universe's recession speed as observed by NASA's WMAP is

$$V = 7.134 \times 10^{4} \text{ m/s} \qquad 13\text{-}8\text{-}2$$

and the radius of the observed universe is

$$R_{\Cup} = 1.295 \times 10^{26} \text{ m}$$

The related mass of the universe is

$$\hbar_{\Cup} = \Delta M_{\otimes} V_{\otimes} \Delta X_{\otimes}$$

$$\Delta M_{\otimes} = \frac{\hbar_{\Cup}}{V_{\otimes} \Delta X_{\otimes}}$$

$$M_{\otimes \Delta \text{co}} = \frac{1.080616 \times 10^{77} \text{ Js}}{\left(\frac{7.134 \times 10^{4} \text{ m/s}}{1 \text{ Mpc}}\right)(1.295 \times 10^{26} \text{ m})}$$

$$= \frac{1.081 \text{ x } 10^{77} \text{ Js}}{9.255 \text{ x } 10^{30} \text{ m/s·Mpc}^{-1}\text{·m}}$$

$$= 1.203 \times 10^{46} \text{ kg} \qquad 13\text{-}8\text{-}3$$

This mass value is calculated by horizon factor $\frac{1.203\times 10^{46} \text{ kg}}{1.409 \times 10^{44} \text{ kg}}$ = 85.38(from Horizon factor 96.412) times smaller and agree with unit galaxy mass.

However, the recession speed of the universe (as calculated in Eq. 13-5-3) is

$$V = 1.324 \times 10^{-6} \text{ m/s} \qquad 13\text{-}5\text{-}3$$

The expected mass of the universe from this recession speed is

$$\Delta M_{\Psi} = \frac{\hbar_{\Psi}}{V_{\Psi}\Delta X_{\Psi}}$$

$$M_{\Psi\Delta\text{co}} = \frac{1.081 \times 10^{77} \text{ Js}}{(1.324\times 10^{-6} \text{ m/s})\ (1.295 \times 10^{26} \text{ m})}$$

$$= 6.305 \times 10^{56} \text{ kg} \qquad 13\text{-}8\text{-}4$$

This result means that this recession speed of the universe is not its final speed, because the expected mass of the universe is smaller than the unit mass of the universe, which was established in Eq13.3.2 above as

$$M_{\Psi} = 1.995314 \times 10^{58} \text{ kg} \qquad 13\text{-}8\text{-}5$$

Difference between two values is

$$d_{M_{\Psi}} = \frac{1.995314\times 10^{58} kg}{6.305\times 10^{56} kg} = 31.65 \qquad 13\text{-}8\text{-}6$$

Essence of this difference is only force line curve

$$g_{\Psi}^{2} = 31.65$$

$$g_{\Psi} = \sqrt{31.65} = 5.626$$

This value means only cosmic force line curve of cosmotomic kaon.

Dark matter in §7 Eq 7-9-9 is

$$\frac{\rho_c}{\rho_G} \cong \frac{1}{0.028} = 35.71 \qquad 7\text{-}9\text{-}9$$

$$g_{\mathbb{U}} = \sqrt{35.71} = 5.976$$

Two values agree impressively well.

Because the recession speed used is not the final speed, the expected observed value $R_{\mathbb{U}} = 1.295 \times 10^{26}$ m is not a meaningful value for the universe.

Conclusion: galaxy is result of fourth quantization of cosmotro-magnetic field by quantum cosmotro dynamics (QCD) of CFLE theory with huge energy quantum of cosmotro-magnetic field$\hbar_{cosmos}$.

13.9 The Size of the Nucleus of the Present Universe

The observable universe radius is

$$R_{\mathbb{U}} = 1.295 \times 10^{26}\ \text{m} \qquad 13\text{-}9\text{-}1$$

For size of cosmic nucleus to calculate is used constant of mass screening$N = 1.190208 \times 10^7$

$$R_{\mathbb{U}} = \frac{1.295\times10^{26}m}{1.190208\times10^{7}} = 1.088 \times 10^{19}\text{m} \qquad 13\text{-}9\text{-}2$$

This value is the start surface of the cosmic nucleus.

As discussed in Eq11-8-1, the nuclear radius of the galaxy is

$$R_{\otimes} = 1.333 \times 10^{20}\ \text{m} \qquad 11\text{-}8\text{-}1$$

Difference of two values is

$$d_{\otimes\mathbb{U}} = \frac{1.333\times10^{20}m}{1.088\times10^{19}m}$$

$$= 12.25 \qquad 13\text{-}9\text{-}3$$

Essence of 12.25 is only maximum force line curve $g = 8$, factor of correspondences $C_c = 1.5$ and permittivity of $x_g = 1.025161$ at $g = 1.5$and $x_e = 1.004712$at $g = 8$

Next possible smaller structure of nucleus of universe is

$$R_{\Psi} = \frac{1.088\times10^{19}m}{(1.417\times10^{14})(1.5)} = 5.119 \times 10^{5}\text{m}$$

The radius of the photon sphere, which is also the lower bound for any stable orbit, is

$$R_{Pho} = \frac{3GM}{c^2},$$

The difference is

$$d_R = \frac{R_{Pho}}{R_{sh}} = \frac{\frac{3GM}{c^2}}{\frac{2GM}{c^2}} = 1.5$$

$$\frac{1.073176}{1.009424} = (1.063157)^2 = 1.130$$

$$R_{\Psi} = \frac{5.119\times10^{5}m}{1.130} = 4.530 \times 10^{5}\text{m} \qquad 13\text{-}9\text{-}4$$

Value of Eq.13-15-7 is

$$R_{\Psi} = 4.525472 \times 10^{5}m$$

Because the two values agree very well, we can accept this value as a meaningful value.

13.10 Obtaining the Hubble Constant from I_o by CFLE Theory

The magnetic field constant (μ_o = Vs/Am) plays a role as a proportional constant for building a magnetic field, according to relativity. But, according to CFLE theory, mass is a very weak electric charge, and so μ_o = Vs/Am can be translated as follows:

$$\mu_o = \text{Vs/Am} \Longrightarrow \mu_o = mq/q^2 = m/q \qquad 13\text{-}10\text{-}1$$

Therefore, μ_o can be analyzed as a changed amount of charge per unit length of electrical force line. However, the gravito-magnetic field constant I_o has the same role as the μ_o of electrodynamics. According to the charge screening theory of CFLE theory, the seed of a particle would absorb shell material as a force line and its elements during the primordial stage of the universe following the Big-Bang. Through this

process, the huge rest mass of the seed becomes the particle that has the light rest mass that we observe today. Therefore,

$$I_o = \text{kg}^2/\text{mq} = \text{kg/m} \qquad 13\text{-}10\text{-}2$$

should be analyzed as the force line absorptions ratio of the seed of the particle. This means that the force line absorption ratio can be analyzed by the mass change ratio by mass screening. In §10.5, the I_o was calculated to be

$$I_o = 1.392710 \times 10^{27} \text{ kg/m} \qquad 13\text{-}10\text{-}3$$

Therefore, the average mass change ratio is

$$R_m = \frac{1}{I_o} = \frac{1kg/m}{1.393 \times 10^{27} \text{ kg/m}}$$

$$= 7.179 \times 10^{-28} \qquad 13\text{-}10\text{-}4$$

Namely, during the Big-Bang process, the seed absorbed the force line elements as force lines and lost its huge bar rest mass, and changed its rest mass to that of present-day particles. Therefore, the time flow from the Big-Bang to date is

$$\tau_m = 1.393 \times 10^{27} \text{ s}$$

$$= \frac{1.393 \times 10^{27}\text{s}}{3.156 \times 10^{7} \text{ s}}$$

$$= 4.414 \times 10^{19} \text{ years} \qquad 13\text{-}10\text{-}5$$

The related Hubble constant is

$$H = \frac{1}{T}$$

$$= 7.179 \times 10^{-28} \text{ m/s}\cdot\text{Mpc}^{-1} \qquad 13\text{-}10\text{-}6$$

Here most important point is that mass change is related with time flow.

In other word time is related not space.

The expansions speed of the universe by this constant is

$$V = H \times \text{D(1Mpc)}$$

$= (7.179 \times 10^{-28}\ \text{m/s·Mpc}^{-1})\ (3.086 \times 10^{22}\ \text{m})$

$= 2.215 \times 10^{-5}\ \text{m/s}$ 13-10-7

13.11 The Meaning of I_o and Comparison with the Hubble Constant of §13.5

The Hubble constant from I_o is

$H = 7.179 \times 10^{-28}\ \text{m/s·Mpc}^{-1}$

The expansion speed form I_o is

$V = 2.215 \times 10^{-5}\ \text{m/s}$ 13-11-1

Because difference between force line curve of pion $g_\pi = 4.006$(§7) from proton and gravitational permittivity of air from correspondences number$C_c = 1.5$, $x_g = 1.02516$, related electrical permittivity at$g = 8$,$x_e = 1.004712$

Effective force line curve is

$(g_{dark})^2 = [\frac{(4.006)(1.025161)(1.000589)}{(1.004712)}]^2 = (4.090)^2 = 16.73$ 13-11-2

So, the expansions speed from I_o is

$V = \frac{2.215 \times 10^{-5}\ \text{m/s}}{(4.090)^2}$

$= 1.324 \times 10^{-6}\ \text{m/s}$ 13-11-3

This final recession speed is same speed from Eq 13-5-3

Thus, the related Hubble constant is

$H = \frac{7.179\ \text{x}\ 10^{-28}\ \text{m/m·Mpc}^{-1}}{16.73}$

$= 4.290 \times 10^{-29}\ \text{m/m·Mpc}^{-1}$ 13-11-4

The related age of the cosmos is

$T = (4.414 \times 10^{19}\ \text{years})\ (16.73)$

$= 7.386 \times 10^{20}$ years 13-11- 5

All these values agree well with those in §13.5 and §11.14. Therefore, we get here more assurance that the mass absorptions ratio of a proton by the charge screening theory of CFLE theory is correct.

13.12 Solving the gravitational CP Violation problem by CFLE Theory

The proton as a nucleus is surrounded by kaons, pions, and muons, particles that have a positive charge, and thus the overall positive charge of the proton originates from these surrounding particles. The positron, which is the anti-particle of the electron, has the same electric charge of a proton, but the gravitational mass is reversely proportional to the electric charge. Every object is basically a combination of electrons and positrons. Therefore, when protons and neutrons decay, they consequently emit positrons and electrons, but the electrons can stay around the proton as orbital electrons. According to CFLE theory, positrons have only two possible fates: the first fate is pair annihilation; the second is to move to the over-abundance area of antimatter.

Such an area in the universe system is the nucleus of the universe, as indicated in Figure 13-12-1.

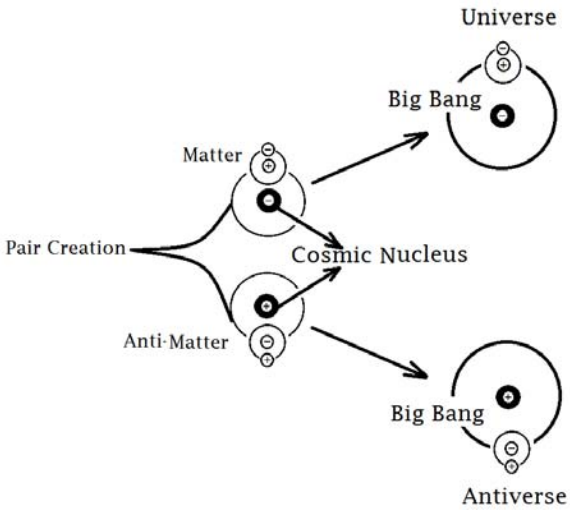


Figure 13-12-1

Because of the correspondence property of CFLE theory, such model can apply to the entire universe, and we can find that the origin of matter-antimatter unbalance is essentially the local symmetry breaking of a general charge like an atom. For example, a positive charge superiorities area occurs near the proton, and likewise a negative charge superiorities area occurs near the electron. The distribution appearance of matter-antimatter is similar to the case of atom. In every huge system like the galaxy and cosmos, local symmetry breaking of a general charge occurs. A tremendously small observer will not be able to find the local charge symmetry breaking and so this becomes a big mystery. But, because local charge symmetry breaking and global charge symmetry always occurs in CFLE theory, this mystery can be explained. According to the correspondence property of CFLE theory, the possible degree of local symmetry breaking in a solar atomic closed system at $g = 1$ (at different g with high energy; cf. chapter on positron excess) is

$$m_{e^+} : M_{e^-} = 1:1836, \quad d = \frac{1}{1.836 \times 10^3} = 5.447 \times 10^{-4} \qquad 13\text{-}12\text{-}1$$

because the Keplerian missing factor is

$$f = 1.202$$

The effective value of this gravitational CP violation is

$$e_{ff} = \frac{5.447 \times 10-4}{1.202} = 4.532 \times 10^{-4}$$

$$\approx 10^{-4} \qquad 13\text{-}12\text{-}2$$

The observed value is

$$\approx 10^{-4} \qquad 13\text{-}12\text{-}3$$

Because this predicted value agrees well with the observed value, we can conclude that the matter–antimatter unbalance distribution problem is solved by CFLE theory.

In other words, the early universe in the period of global neutral symmetry breaking produced matter and antimatter pairs as matter universe and anti universe(so called anti-verse) with CP violation, and matter universe from these pairs moved away from the anti matter universe. The total moving distance between all matter and the anti matter constituted by nucleus and satellite became so tremendously

large (Figure 13-12-1) that the present observer cannot imagine such dipolar mass distribution.

Therefore, it has remained a mystery for those who cannot imagine the possible production of universal gravitational dipolar pairs and are unable to conceive of the cosmic nucleus and anti-verse without an eligible theory (modern physics can predict only mathematical singularity) and eligible observation technique.

Therefore gravitational CP violation of universe (V_{CP}=+10^{-4}) and anti verse (V_{CP}=-10^{-4}) is

$$V_{CP} = 10^{-4} - 10^{-4} = 0 \qquad \text{13-12-4}$$

Now, violated CP is vanished and conservation's law can be kept.

13.13 Possible Maximum Mass Number of the Cosmos and Related Mass of the Cosmos

In §11, the possible mass number of the galaxy was established as $A_{\otimes}$ = 2027; namely, $\mathrm{G}_{\mathrm{N}}^{\mathrm{N}}$ is $\mathrm{G}_{\mathrm{N}}^{2027}$.

However, because of the existence of the cosmic force line and its element, the possible maximum mass number is

$$A_{\mathbb{U}} = (2027)\,(6.782)$$

$$= 1.375\times 10^{4} \qquad \text{13-13-1}$$

Therefore, the maximum mass of the present universe is

$$M_{\mathbb{U}} = (1.996 \times 10^{58}\ \mathrm{kg})\,(1.375 \times 10^{4})$$

$$= 2.745 \times 10^{62}\ \mathrm{kg} \qquad \text{13-13-2}$$

This value is the final value of the mass of the present universe.

13.14 Current State of the Cosmos

In §13.9, I established the cosmic energy quantum, $\hbar_{\mathbb{U}}$, where

$$\hbar_{\mathbb{U}} = 1.080616 \times 10^{77}\ \mathrm{Js} \qquad \text{13-14-1}$$

and from §13.14, the final mass of the cosmos was calculated to be

$M_{\Cup} = 2.745 \times 10^{62}$ kg 13-14-2

and in §13.1, the final known size of the universe was determined as

$R_{\Cup} = 1.075 \times 10^{28}$ m 13-14-3

Of course, the observed value is $R_{\Cup} = 1.295\times 10^{26}$ m.

Therefore, useful information about the expansions speed of the universe can be brought out from

$\hbar_{\Cup} = \Delta M_{\Cup} V_{\Cup} \Delta X_{\Cup}$ 13-14-4

That is,

$$V_{\Cup} = \frac{\hbar_{\Cup}}{M_{\Cup}\Delta X_{\Cup}}$$

$$= \frac{1.081 \times 10^{77}\ \text{Js}}{(2.745 \times 10^{62}\ \text{kg})\ (1.075 \times 10^{28}\ \text{m})}$$

$$= \frac{1.081 \times 10^{77}\ \text{Js}}{2.956 \times 10^{90}\ \text{kg·m}} /$$

$$= 3.663 \times 10^{-14}\ \text{m/s} \qquad 13\text{-}14\text{-}5$$

Because the gravitational permittivity of air at $g = 2$ and electrical permittivity of air at $g = \frac{1}{2}$ is

$Q_1 = (0.016774)\ (2) = 0.033548, \quad x_1 = 1.033548$

$Q_2 = (0.000589)/2 = 0.000295, \quad x_2 = 1.000295$

$x_{tot} = (1.033548)/\ (1.000295) = 1.033243$ 13-14-6

Therefore, the real expansion speed is

$V_{\mathbb{U}} = (3.663 \times 10^{-14}\ \text{m/s})\ (1.033243)$

$= 3.785 \times 10^{-14}$ m/s 13-14-7

The observed speed by NASA's WMAP is

$V_W = 7.134 \times 10^4$ m/s

so the difference between these two speed values is

$$\frac{V_{\mathrm{W}}}{V_{\mathbb{U}}} = \frac{7.134\times 10^{4}\ \mathrm{m/s}}{3.785\times 10^{-14}\ \mathrm{m/s}}$$

$$= 1.885 \times 10^{18} \qquad \text{13-14-8}$$

When the expansion speed of the cosmos is $V = 7.134 \times 10^{4}$ m/s·Mpc^{-1}, the age of the universe is

$$\tau_{\mathbb{U}} = 1.380\times 10^{10} \text{ years}$$

Therefore, the final age of the cosmos is 4.687×10^{21}

$$\tau_{\mathbb{U}} = (1.380\times 10^{10} \text{ years})\ (1.885 \times 10^{18})\ (2027)$$

$$= 5.273 \times 10^{31} \text{ years} \qquad \text{13-14-9}$$

$N_{\mathrm{CS}} = 1.885 \times 10^{18}$ is called the cosmic scale factor or cosmic time dilatation scale factor.

$$N_{tot} = (1.885 \times 10^{18})\ (2027)$$

$$= 3.821\times 10^{21} \qquad \text{13-14-10}$$

Because electrical permittivity difference by $C_c^2 = 2.25$ and keplerian missing factor $f_k = 1.202$, effective value is

$$N_{tot} = (3.821\times 10^{21})(1.202)(1.001325)$$

$$= 4.599\times 10^{21} \qquad \text{13-14-11}$$

this value is called the relativistic scale factor .

$$T = (1.380\times 10^{10} \text{ years})\ (4.599\times 10^{21})$$

$$= 6.437 \times 10^{31} \text{ years} \qquad \text{13-14-12}$$

The difference is

$$d = \frac{6.437 \text{ x } 10^{31} \text{ years}}{5.357 \text{ x } 10^{31} \text{ years}} = 1.202 \qquad \text{13-14-13}$$

where 1.202 is keplerian missing factor$f_k = 1.202$.

The expansions speed $v = 1.324\times10^{-6}$ m/s from I_o and from WMAP is different.

The recession speed observed by NASA's WMAP is

$V_w = 7.134 \times 10^4$ m/s·Mpc^{-1}

The expansion speed from I_o is

$V = 1.324 \times 10^{-6}$ m/s·Mpc^{-1} 13-14-14

This speed difference is

$$d_Z = \frac{v_w}{v_{I_o}} = \frac{7.134 \times 10^4 \text{ m/s·Mpc}^{-1}}{1.324 \times 10^{-6} \text{ m/s·Mpc}^{-1}}$$

$$= 5.388 \times 10^{10}$$

This difference is minimum maxwellian missing factor.

The maximum mass of the universe by mass number of universe $A_{\mathbb{U}} = 1.375 \times 10^4$ is

$$M_{\mathbb{U}} = (1.995862 \times 10^{58} \text{ kg})\ (1.375 \times 10^4)$$

$$= 2.743589 \times 10^{62} \text{ kg} \qquad 13\text{-}14\text{-}15$$

This mass is the final maximum rest mass of the universe.

Because correspondence number $C_c^2 = (1.5)^2 = 2.25$,keplerian missing factor $f_k = 1.202$ electrical permittivity at $g = (8 \times 1.5 \times$ *1.202→xe=1.008496*, force interval constant $N^3 = (1.190208 \times 10^7)^3 = 1.686044 \times 10^{21}$is added as

$$A_d = (2.25)(1.202)(1.008496) = 2.7275 \qquad 13\text{-}14\text{-}16$$

Effective value is

$$N_{eff} = (1.686044 \times 10^{21})(2.7275)$$

$$= 4.599 \times 10^{21}$$

This value is the same value with Eq. 13-14-11

For mass calculate is added gravitational permittivity and related electrical permittivity. That is

$$N_{eff} = (4.599 \times 10^{21})(1.016774)(1.002508)$$

$$=4.687867\times 10^{21} \qquad 13\text{-}14\text{ -}17$$

Now we can calculate the bar mass of the universe. That is

$$M_{\blacksquare} = (2.743589 \times 10^{62}\text{ kg})\ (4.687867 \times 10^{21})$$

$$= 1.286158 \times 10^{84}\text{ kg} \qquad 13\text{-}14\text{-}18$$

the predicted value of the current size of the cosmos by CFLE theory is

$$R_{\blacksquare} = (1.295\times 10^{26}\text{m})(4.687867\times 10^{21})$$

$$= 6.070 \times 10^{47} m$$

Because mass number of universe is

$$A_{\mathbb{U}} = 1.375\times 10^{4}$$

Is final radius of universe is

$$R_{\blacksquare} = (6.070\times 10^{47}\text{m})(1.375\times 10^{4})$$

$$= 8.346 \times 10^{51} m \qquad 13\text{-}14\text{-}19$$

the predicted value of the current age of the cosmos by CFLE theory is

$$\tau_{\blacksquare} = (1.380\times 10^{10} years)(4.687867\times 10^{21})$$

$$= 6.469 \times 10^{31} years$$

Final age of universe is

$$\tau_{\blacksquare} = (6.469\times 10^{31} years)(1.375\times 10^{4})$$

$$= 8.895 \times 10^{35} years \qquad 13\text{ -}14\text{-}20$$

13.15. Solving Cosmological Contradiction: How could Start Cosmos from Singularity of Inside of Event Horizon

According to result of WMAP experiment curvature of universe is

Flat.

Observed value is

$$\Omega_{k\mathbb{W}} = -0.0027^{+0.0039}_{-0.0038} \qquad 13\text{-}15\text{-}1$$

This result means only permittivity

Because density of ordinary matter by WMAP is 0.046%,

Related force line curve is $g = 4.663$(cf.§7)

$$Q_e = 0.0027 = (0.000589)(4.584) \qquad 13\text{-}15\text{-}2$$

However, here force line curve is $g = 4.584$

Difference is

$$d_g = \frac{4.663}{4.584} = 1.017 \qquad 13\text{-}15\text{-}3$$

This difference is only gravitational permittivity of air $x_e = 1.016774$ at $g = 1$.

This result means that curvature of universe is perfect flat and Einstein's general relativity is useless and meaningless.

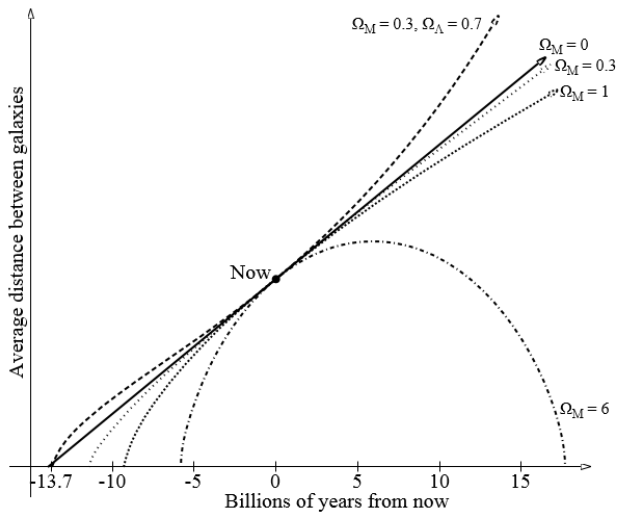
Because universe is not curved, Einstein's general relativity cannot predict about anything of universe.

Such inability of general relativity cannot permit to know about beginning of the universe. This problem is very important.

Because singularity is in inside of event horizon with infinitive density,

any matter even light cannot escape from there. However, now we can observe CMB. This contradiction to explain is not easy.

Therefore, resent cosmologists want to know about ultimate fate of universe by Einstein's general relativity. But they cannot decide about ultimate fate of universe and only confused results to guess as Figure 13-15-1



the ultimate fate of an expanding universe depends on the matter density Ω_M and the dark energy density Ω_Λ

Figure 13- 15-1

However, CFLE theory can explain about beginning of the universe and end of the universe clearly, because light speed is not absolute speed in CFLE theory.

In §7.6.3 speed of free gluon as gluomagnetic boson by strong charge or stellar charge according to formula $R_s = \frac{2GM}{c^2} \rightarrow c = \sqrt{\frac{2GM}{R_s}}$ is

$$c_{gluon} \cdot N_{\otimes} = \sqrt{\frac{(2GM)(1.190208\times10^7)}{(R_{shwartz\ schild})/(1.190208\times10^7)}} \qquad 11\text{-}18\text{-}2\text{-}1$$

$$c_{free\ galaxon} = 4.889655 \times 10^{17} ms^{-1} \qquad 11\text{-}18\text{-}2\text{-}3$$

However, cosmic charge is 1.190208×10^7time stronger than galactic charge.

Therefore, expected speed of cosmoson as cosmotromagnetic gauge boson that build by cosmic force line is

$$c_{galaxon} \cdot N_{\mathbb{u}} = \sqrt{\frac{(2GM)(1.190208\times10^{7})}{(R_{shwartz\ schild})/(1.190208\times10^{7})}} \qquad 13\text{-}15\text{-}4$$

$$c_{cosmoson} = c_{gluon} \cdot 1.190208 \times 10^{7}$$

$$= (4.889655 \times 10^{17} ms^{-1})(\ 1.190208 \times 10^{7})$$

$$= 5.819706 \times 10^{24} ms^{-1} \qquad 13\text{-}15\text{-}5$$

where G is used G_{newton} =6.673838× 10^{-11}N. (m/kg)^2

Size of cosmotromagnetic event horizon of cosmos's center according to formula $R_s = \frac{2GM}{c^2}$ is

$$R_{\mathbb{u}} = \frac{(2)(6.673838\times10^{-11}C)(8.162\times10^{36}kg)(1.190208\times10^{7})^2}{(5.819706\times10^{24})^2}$$

$$= 4.555 \times 10^{-9} m \qquad 13\text{-}15\text{-}6$$

electromagnetic event horizon of sgrA^* as galactic nucleus is

$$R_{\otimes} = (41)(2.998\times 10^{8} m) = 1.229 \times 10^{10} m \qquad 11\text{-}19\text{-}1\text{-}4$$

electromagnetic event horizon of universe is

$$R_{\mathbb{se}} = (1.485 \times 10^{-27})(1.923\times 10^{53} kg)$$

$$= 1.295 \times 10^{26} m \qquad 13\text{-}1\text{-}6$$

Therefore, Hubble constant $H_o = \frac{V}{D}$ should be

$$H_o = \frac{5.820\times10^{24} ms^{-1}}{8.346\times10^{51} m} = 6.973\times 10^{-28}\ \text{m/s·Mpc}^{-1} \qquad 13\text{-}15\text{-}7$$

$$H = \left(6.973 \times 10^{-28}\,\frac{\text{m}}{\text{s}} \cdot \text{Mpc}^{-1}\right)(1.029543)$$

$$= 7.179 \times 10^{-28}\ \text{m/s·Mpc}^{-1} \qquad 13\text{-}15\text{-}8$$

where factor of 1.029543 is gravitational permittivity $x_g = 1.025161$ at $g = 1.5$and electrical permittivity $x_e = 1.004274$at $g = 7.256339$.

This value is same as Eq 13-10-6

$H = 7.179 \times 10^{-28}$ m/s·Mpc^{-1} 13-10-6

$\tau_m = 1.393 \times 10^{27}$ s 13-10-5

Because $v = at$ is, acceleration of expansion of universe is

$$a_{expansion} = \frac{v}{t}$$

$$= \frac{5.819706\times10^{24} ms^{-1}}{1.393\times10^{27} s}$$

$$= 4.178 \times 10^{-3} \mathrm{m/s^2} \qquad 13\text{-}15\text{-}9$$

Related distance of expanding universe $s = \frac{1}{2}at^2$ is

$$s = \frac{1}{2}at^2$$

$$=(4.178\times 10^{-3}\mathrm{m/s^2})(1.393\times 10^{27}s)^2$$

$$=8.107\times 10^{51}m$$

Final distance as radius of universe is

$$s = (8.107\times 10^{51}m)(1.029543)$$

$$= 8.346 \times 10^{51}m \qquad 13\text{-}15\text{-}10$$

This size is same size of Eq 13-14-19

$$R_{\blacksquare} = (6.070\times 10^{47}\mathrm{m})(1.375\times 10^{4})$$

$$= 8.346 \times 10^{51}m \qquad 13\text{-}14\text{-}19$$

However, final acceleration of expanding universe is

$$a_{expansion} = \frac{4.178\times10^{-3} m/s^2}{2}$$

$$= 2.089 \times 10^{-3} \mathrm{m/s^2} \qquad 13\text{-}15\text{-}11$$

Because $I_o = 1.392710 \times 10^{27}$ kg/m is, the average mass screening ratio is

$$R_m = \frac{1}{I_o} = \frac{1kg/m}{1.393 \times 10^{27}\ \text{kg/m}}$$

$$= 7.179 \times 10^{-28} \qquad 13\text{-}10\text{-}4$$

Age of the universe is

$$\tau_m = 1.393 \times 10^{27}\ \text{s}$$

$$= \frac{1.393 \times 10^{27}\text{s}}{3.156 \times 10^{7}\ \text{s}}$$

$$= 4.414 \times 10^{19} \text{ light years} \qquad 13\text{-}10\text{-}5$$

$$\tau_m = (4.414 \times 10^{19} \text{ years})\ (16.73)$$

$$= 7.386 \times 10^{20} \text{ years}$$

The related age of the cosmos from §11 is

$$T = (4.414 \times 10^{19} \text{ years})\ (16.73)$$

$$= 7.386 \times 10^{20} \text{ years} \qquad 11\text{-}15\text{-}7$$

Therefore, final age of universe is

$$\tau_{\blacksquare} = (7.386\times 10^{20} years)(1.190208\times 10^{7})^{2}$$

$$= 1.046\times 10^{35} years \qquad 13\text{-}15\text{-}12$$

Final age of universe by mass number of the universe is

$$\tau_{\blacksquare} = (6.437\times 10^{31} years)(1.375\times 10^{4})$$

$$= 8.851 \times 10^{35} years \qquad 13\text{-}15\text{-}13$$

Difference between two values $\frac{8.895\times10^{35} years}{8.851\times10^{35} years} = 1.004971$ is difference of electrical permittivity.

Size difference between $6.070 \times 10^{47} m$ and $6.987 \times 10^{36} m$ is

$$R_{atio} = \frac{6.070 \times 10^{47} m}{6.987 \times 10^{36} m} = 8.688 \times 10^{10} \qquad 13\text{-}15\text{-}14$$

This size relation is correspond relation between radius of optical surface of the Sun and maximum radius of solar system.

Ratio for maximum solar system is

$$R_{atio} = (8.688 \times 10^{10})(\ 2.404\ ) = 2.089 \times 10^{11} \qquad 13\text{-}15\text{-}15$$

where factor of 2.404 is earth gravitational force line curve of earth $g = 1.202$ and start force line curve at $g = 2$

According to Eq 13-13-1 mass umber of universe $A_{\mathbb{U}}$ is

$A_{\mathbb{U}}$ = (2070) (6.782)

$$= 1.375 \times 10^{4} \qquad 13\text{-}15\text{-}16$$

For ratio of galactic charge radius and galaxy system is

$$R_{atio} = \frac{2.089 \times 10^{11}}{1.375 \times 10^{4}} = 1.519 \times 10^{7} \qquad 13\text{-}15\text{-}17$$

According to Eq8-2-4 mass number of stellar is

A = (238.030) (1.459)

$$= 347.286 \qquad 8\text{-}2\text{-}4$$

Therefore, ratio between Sun's charge radius and solar system is

$$R_{atio} = \frac{1.519 \times 10^{7}}{1.74 \times 10^{2}} = 8.730 \times 10^{4} \qquad 13\text{-}15\text{-}18$$

Charge radius of the Sun (from mass center to photosphere of the Sun) is

$$R_{\odot} = 6.954739 \times 10^{8} m$$

Therefore expected theoretical radius of solar system is

$$R_{\oplus} = (6.954739 \times 10^{8} m)(8.730 \times 10^{4})$$

$$= 6.072 \times 10^{13} m \qquad 13\text{-}15\text{-}19$$

This value is converted to 1 AU= $1.496 \times 10^{11} m$

$$R_{\odot\oplus} = \frac{6.072 \times 10^{13} m}{1.496 \times 10^{11} m} = 4.059 \times 10^{2}$$

$$R_{\odot\oplus} = 405.9\ AU$$

$$\approx 410 AU \qquad 13\text{-}15\text{-}20$$

Theoretical expectation value by Sun's full energy level of $n = 6 \times 6 \times 6 \times 6$ (§cf.9.2.1) is

$$R_{\odot\oplus} \approx 420 AU \qquad 9\text{-}3\text{-}6$$

Conclusion: such ratio between charge radius and radius of structure system is same on atom, star, galaxy and universe.

13.16 Solving the Baryon Asymmetry and Future of the universe problems by CFLE thepry

Because CP violation is violation of conservations' law, it is needed for conservations' law and gauge symmetry to satisfy. According to such point of view it is needed anti universe as figure 13-16-1.

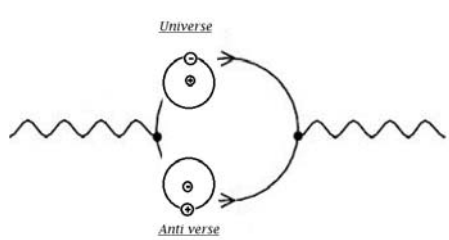


Figure 13-16-1

Therefore it is required that beginning of the universe was pair creation from neutral cosmotomic Seedium by quantum vacuum self interaction of $\pm$seed of universe.

After pair creation of $\pm\, seed\ the\ \pm$ universe begin big bang by absorption of light from pair annihilation.

Therefore end of the universe must be pair annihilation by quantum vacuum self interaction of $\pm$ seed of universe.

Figure 13-16-2

Figure 13-16-2 show self inter action of electron.

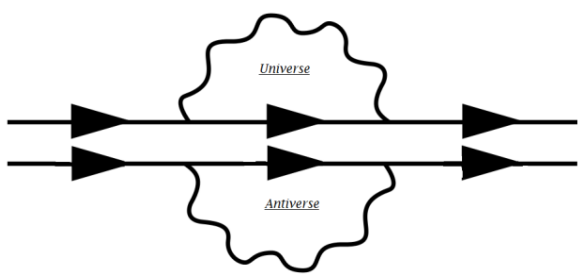


Figure 13-16-3

However, such self interaction can happen at positron too as figure 13-16-3 same time with self interaction of electron.

According to correspondence principal of CFLE theory we can extend such self interaction to universe. In figure 13-16-4 we can find pair creation of $\pm$seed of universe from neutral seedium of cosmos clearly.

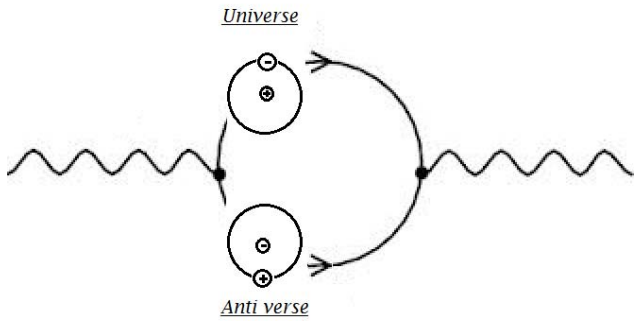


Figure 13-16-4

Energy of this process is predicted $10^{79}\sim10^{82}erg = 10^{72}\sim10^{75}J$ by CFLE theory (cf.§11.17).

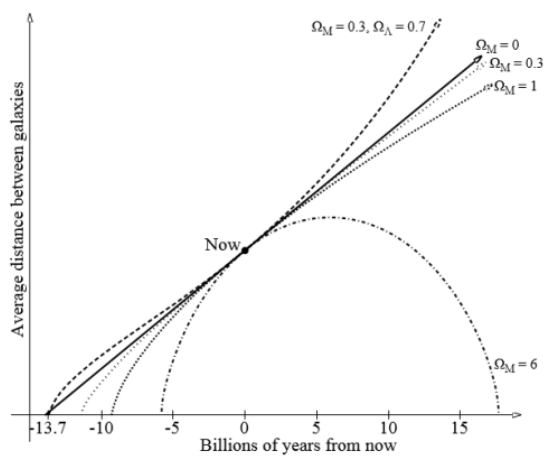


Figure 13-16-5

This diagramm shows how present astrophysical theories are confused.

Scientists of old age are tested and disodered by these five theoretical possibility.

Because scientis of old age, they expect to predict for ultimate fate of universe by Einsteins general relativity as curved space –time theory as that the age and ultimate fate of the universe can be determined by measuring the Hubble constant today and extrapolating with the observed value of the deceleration parameter, uniquely characterized by values of density parameters (Ω_M for matter and Ω_Λ for dark energy). A "closed universe" with $\Omega_M > 1$ and $\Omega_\Lambda = 0$ comes to an end in a Big

Crunch and is considerably younger than its Hubble age. An "open universe" with $\Omega_M \leq 1$ and $\Omega_\Lambda = 0$ expands forever and has an age that is closer to its Hubble age. For the accelerating universe with nonzero Ω_Λ that we inhabit, the age of the universe is coincidentally very close to the Hubble age.

However, test result of degree of curve of space- time is flat by PLANK SAT and WMAP. They assert that 0.046% of ordinary matter and rest of dark matter is flat. Therefore general theory of relativity as curved space-time theory cannot predict and calculate, because their universe is flat.

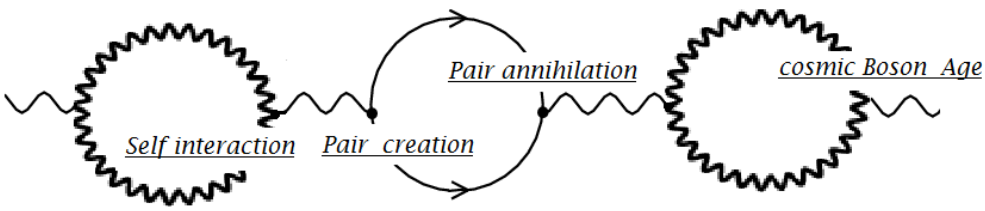


Figure 13-16-6

Figure 13-16-6 shows that pair creation by self interaction and expanded universe and anti-verse with acceleration.

Observed value of baryon to photon ratio by PLANCK as Figure 13-16-7 is

$$\eta = (6.19 \pm 0.14) \times 10^{-10} \qquad 13\text{-}16\text{-}1$$

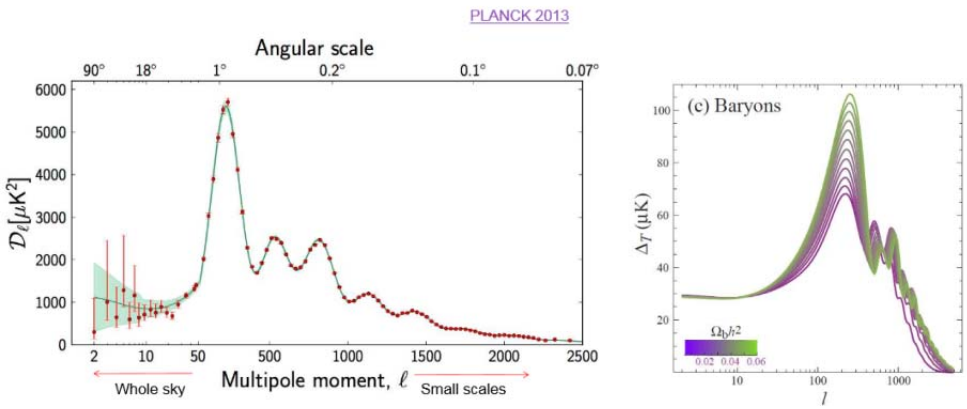


Figure 13-16-7

This result means quantitatively

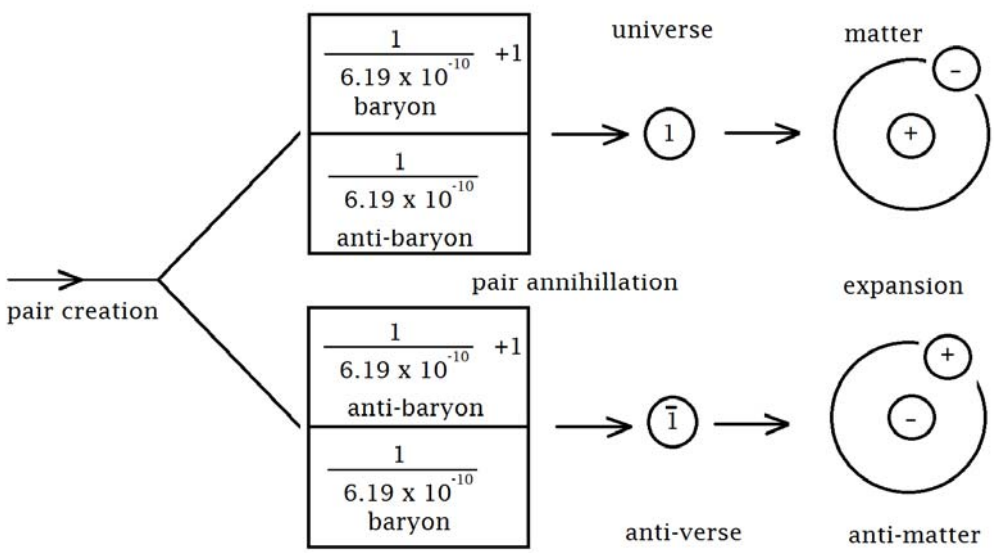


Figure 13-16-8

According to this diagram ultimate fate of universe should be pair annihilation by self interaction with acceleration.

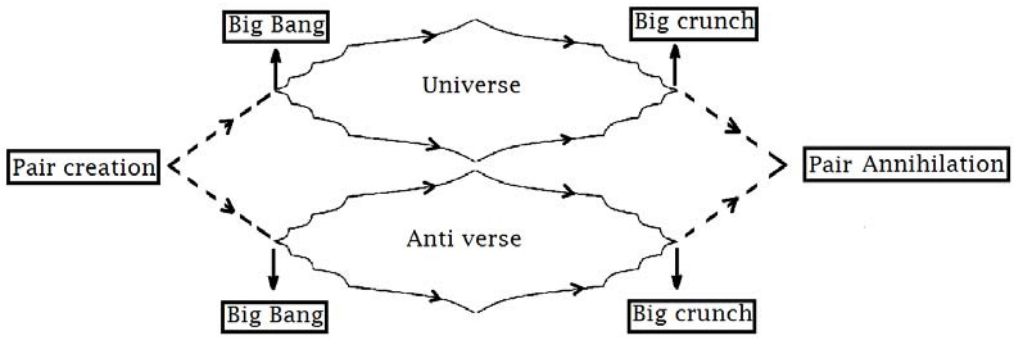


Figure 13-16-9

Conclusion: Einstein's general relativity is useless in flat universe and wrong by observation of WMAP and PLANCK.

13.17 cosmic system

According to correspondence principle of CFLE theory, existence of dwarf universe is predicted as electron in atom system, scattered planet in solar system and dwarf galaxy in galaxy system as figure 13-7-1.

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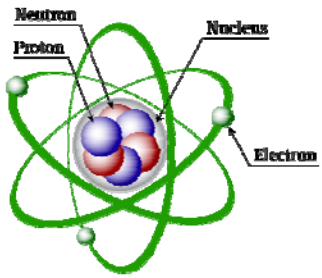
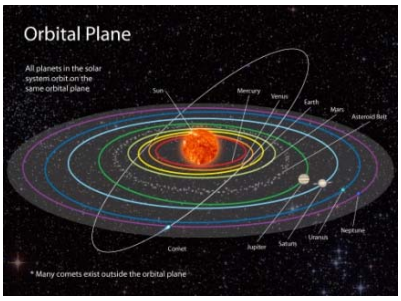


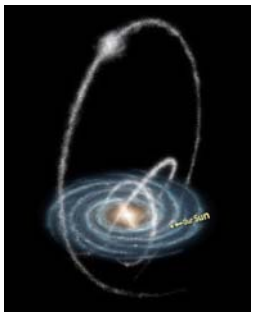
Electron

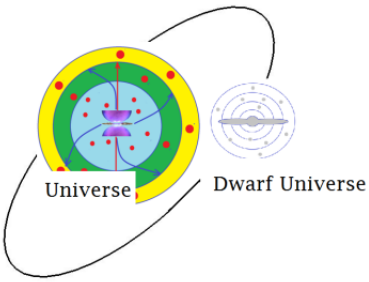
Atom system



Scattered objects

Solar system





Canis Major Dwarf Galaxy **Dwarf universe 1**

Milky Way system **Cosmos system**

Figure 13-17-1