Chapter IV

Cosmological Red Shift.
The Curved, Not "Accelerated" Universe

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The last Revelation from God

Conventional cosmology claims that the *red shift* in the spectrum of distant cosmic objects is due to the expansion of the universe – after the Big Bang explosion. This claim, however, as many others connected with the *Theory of Big Bang*, is a WRONG CLAIM! The *red shift* is a quantum effect – see below.

As was explained before in *GQM*, the *Proton Matter Universe* represents two-dimensional (2D) spherical manifold composed by enormous amount of elementary material bricks called by me "nucleorons" (*GQM-IV, Chapter II*). The internal elementary structure of "nucleorons" is presented on Figure IV-1.

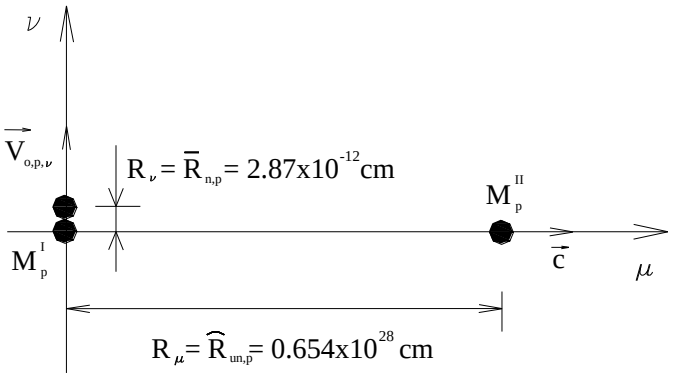


Fig. IV-1

$$\hat{R}_{n,p} = \frac{\hbar_p^2}{M_p \times e^2} = \frac{(1.05 \times 10^{-27})^2}{1.67 \times 10^{-24} \times (4.8 \times 10^{-10})^2} = 2.87 \times 10^{-12}, cm$$

- Spatial dimension of the nucleoron

Where,

$\hbar_p$ - Planck's constant, $\hbar_p$ = 1.0545 x 10^{-27} , erg.s
M_p – mass of proton, M_p = 1.6725 x 10^{-24}, g
e – elementary electrical charge, e = 4.803 x 10^{-10}, GCS

$$\widehat{R}_{un,p} = \frac{\hbar_p^2}{G \times M_p^2 \times m_e} = ... = 0.654 \times 10^{28}, cm$$

- Spatial dimension of the Proton Matter Universe

The number of the nucleorons on the axis **ν** in the Proton Matter Universe is:

$$N_{nucleus} = \frac{\widehat{R}_{un,p}}{\overline{R}_{n,p}} = \frac{\dfrac{\hbar_p^2}{G \times M_p^2 \times m_e}}{\dfrac{\hbar_p^2}{M_p \times e^2}} = \frac{e^2}{G \times M_p \times m_e} = A_{e,p} = 2.27 \times 10^{39}!$$

See Figures IV-2, IV-3, and IV-4.

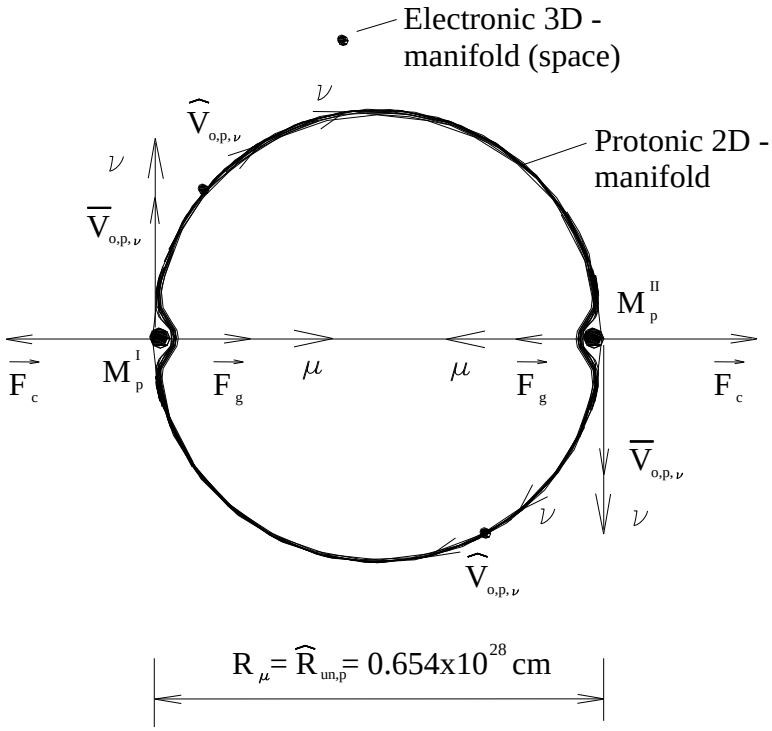


Fig. IV-2

As seen on Figure IV-2, every single nucleoron exercises pressure (deformation) on the 2D *Proton Matter Manifold.* As a result of this pressure/deformation gravity attraction appears (See also *GQM-IV, Chapter III*). The gravity force $\vec{F}_g$ is balanced by the centrifugal force $\vec{F}_c$.

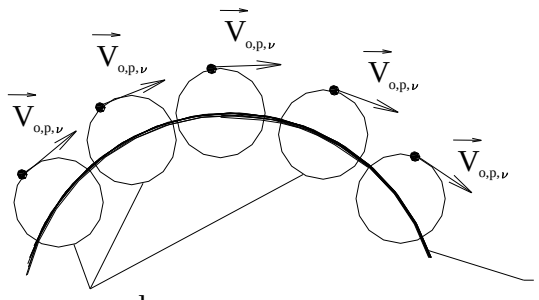
$$\vec{F}_c - \vec{F}_g = 0 \quad \rightarrow \quad \frac{M_p \times \bar{V}^2_{o,p,\nu}}{\hat{R}_{un,p}} = \frac{G \times M_p^2}{\hat{R}^2_{un,p}} \quad \rightarrow \quad \bar{V}^2_{o,p,\nu} = \frac{G \times M_p}{\hat{R}_{un,p}}$$

$$\bar{V}^2_{o,p,\nu} = \frac{G \times M_p}{\frac{\hbar_p^2}{G \times M_p^2 \times m_e}} = \frac{G^2 \times M_p^3 \times m_e}{\hbar_p^2} \quad \rightarrow \quad \bar{V}_{o,p,\nu} = \frac{G \times M_p}{\hbar_p} \times \sqrt{M_p \times m_e}$$

$$\hat{V}_{o,p,\nu} = \pi \times \bar{V}_{0,p,\nu} = \frac{\pi \times G \times M_p}{\hbar_p} \times \sqrt{M_p \times m_e} = \frac{2\pi^2 \times G \times M_p}{h_p} \times \sqrt{M_p \times m_e}$$

$$\hat{V}_{o,p,\nu} = 1.3 \times 10^{-29}, cm/s\,!$$

As a result of this quantum effect every single elementary *Proton Matter* brick nucleoron is "moving" forward (from the Observer) - by contrast with the *Absolute System of Reference* connected with the 3D *Electron Matter Universe* - with velocity $\hat{V}_{o,p,\nu}$! See Figure IV-3.



nucleorons
(M_p=1.67x10^{-24}g; $\bar{R}_{n,p}$=2.87x10^{-12}cm)

2D - Protonic Matter manifold (Protonic Universe)
$\hat{R}_{un,p}$= 0.654x10^{28} cm

Fig. IV-3

The light (or others) photons - emitted by some distant cosmic object - are moving (visiting) through all elementary spatial cells occupied by *nucleorons* and accumulate in their "memory" this quantum motion (draggle) of the nucleorons. **As a result red shift in the photon spectra appears!**

The maximum quantum velocity is for the furthest - by contrast with the Observer – point in the universe. See Figure IV-4.

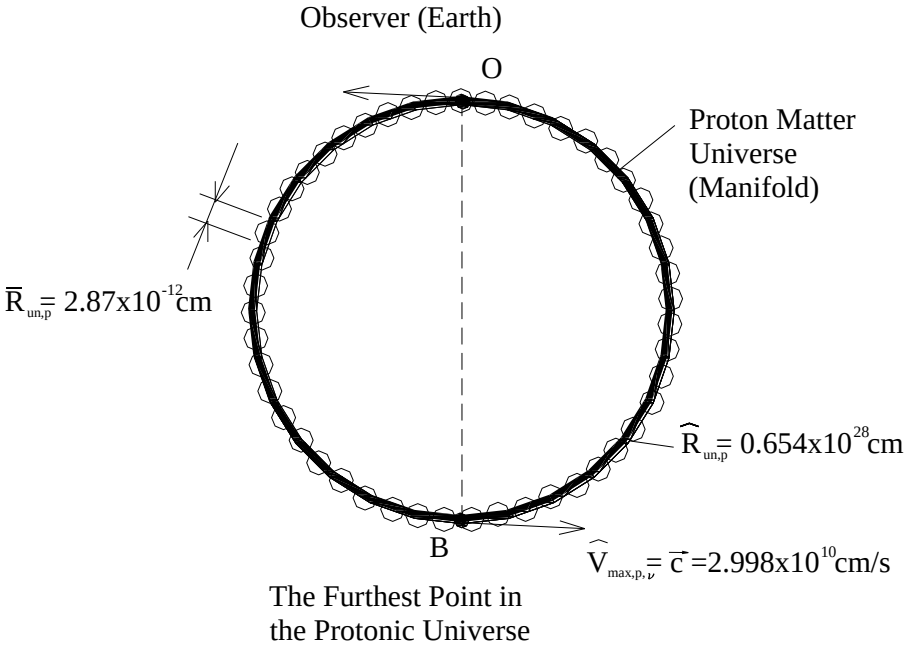


Fig. IV-4

$$\max \widehat{V}_{p,\nu} = A_{e,p} \times \widehat{V}_{o,p,\nu} = \frac{e^2}{G \times M_p \times m_e} \times \frac{2\pi^2 \times G \times M_p}{h_p} \times \sqrt{M_p \times m_e}$$

$$\max \widehat{V}_{p,\nu} = \frac{2\pi^2 \times e^2}{h_p \times m_e} \times \sqrt{M_p \times m_e} = \frac{2\pi^2 \times e^2}{h_p} \times \sqrt{\frac{M_p}{m_e}}$$

$\max \widehat{V}_{p,\nu}$ =…= 2.95 x 10^{10}, cm/s !

The maximum velocity $\hat{V}_{p,v}$ must be equal to the speed of light ***c*** = 2.99 x 10^{10}, cm/s. There exists little discrepancy (difference) in both values, but we cannot expect perfect coincidence because the values of the world constants are products of numerous world symmetries – more or less important (See *GQM-III, Chapter 11*).

As we see the value of the world constant "speed of light" ***c*** is a product of the values of other world constants! Nothing in this world is random; everything is interconnected with the rest of the world!

The value of the speed of light is given the formula:

$$c = \frac{2\pi^2 \times e^2}{h_p} \times \sqrt{\frac{M_p}{m_e}}$$

Where, $h_p = 6.62 \times 10^{-27}$, $erg.s$

Great Formula in the Fundamental Physics!!!

Astronomers have recently announced that the universe appears to be expanding at an accelerating rate. This is inferred because distant supernovae type ***Ia*** is unexpectedly dim. This is interpreted as implying that the expansion of the universe is faster now than it was before. This expansion is in turn explained by some mysterious repulsive force (engendered by some invisible and undetectable "dark" energy) that is pushing the universe apart. "*Cosmic acceleration is the biggest mystery in all of science",* says cosmologist Michael Turner.

Originally, it was believed that the red shift was proportional to distance (*Hubble's law*). However, the accelerating expansion of the universe was inferred because distant supernovae are fainter than expected based on their red shift. The case for cosmic acceleration rests on the observation that ***Sne Ia*** (supernova) at ***z*** = 0.5 are 25% fainter than they would be in a universe without acceleration. This means that they are farther away than one would expect based on the linear increase of red shift with distance.

The observed anomaly is interpreted as evidence that the universe was expanding more slowly in the past, so that the red shift of distant objects is less than one would expect. When the light from distant objects began its journey, the universe, and therefore space, was expanding more slowly. Thus there was a smaller contribution to the red shift than for light that traveled more recently. Nearer objects are less subject to this slowdown, because the universe was expanding faster when light left them. Thus their red shift is comparatively larger, in proportion to their distance from us.

This effect can also be explained by a slowdown in the speed of light (too valuable sacrifice on the altar of science, however!). If light were traveling faster originally, then a slowdown would make distant objects appear fainter. The reason these supernovae would appear fainter is that light was traveling faster when it left them. This would make these objects appear farther away than they really are. And so, on.

The accepted – by conventional contemporary physical science - as "final truths" in cosmology are not all *real truths*! Big Bang theory and based on this theory assumptions as: expansion (inflation) of the universe, flat geometry of the universe, "accelerating" universe, "dark matter", "dark energy", and others, are just theoretical speculations which have no real equivalent in the real world.

The way leading us to the realm of absolute truths in Fundamental Science is going through many errors and many fallacies. Only God – The Super-Mind of the universe - can open our eyes and our minds for discovering and understanding the real nature of the observable phenomenon in the universe. This happens with me.

My explanation of the so-called effect of "acceleration" of the universe is totally different.

As I mentioned in the previous chapters of this book, the *Protonic Matter Universe* represents 2D spherical manifold. See Figure IV-5.

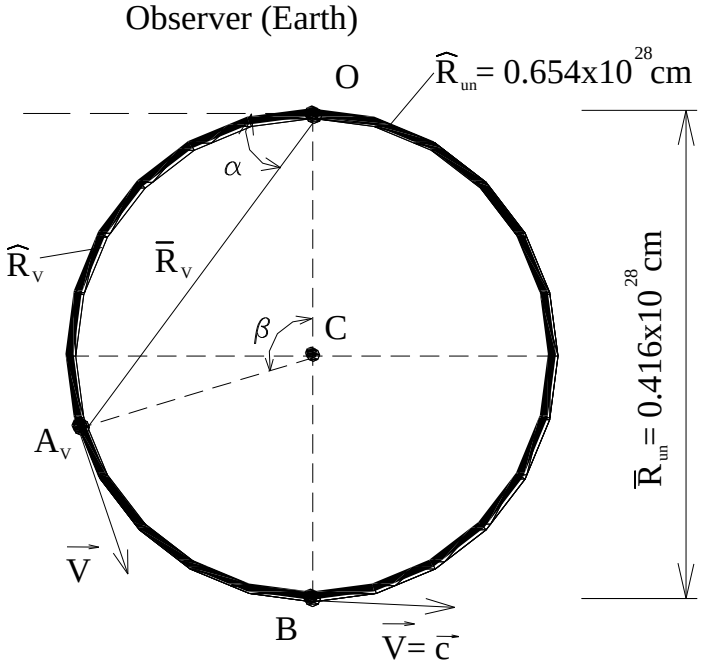


Fig. IV-5

$$\frac{\hat{R}_{un}}{\bar{R}_{un}} = \frac{\pi}{2}; \quad 0 \le \alpha \le \frac{\pi}{2}, 90°; \quad 0 \le \beta \le \pi, 180°$$

$$\Delta\bar{R}_V = \hat{R}_V - \bar{R}_V; \qquad \left|\vec{V}_0\right| = 0; \qquad \left|\vec{V}_B\right| = c = 2.9979 \times 10^{10}, \frac{cm}{s}$$

$$Z = \frac{1}{\sqrt{1 - \frac{V^2}{c^2}}} - 1, \qquad Z - red\ shift$$

$$V = 0 \ \rightarrow \ Z = 0; \qquad V = c \ \rightarrow \ Z = \infty$$

Let analyze the triangle presented on Figure IV-6.

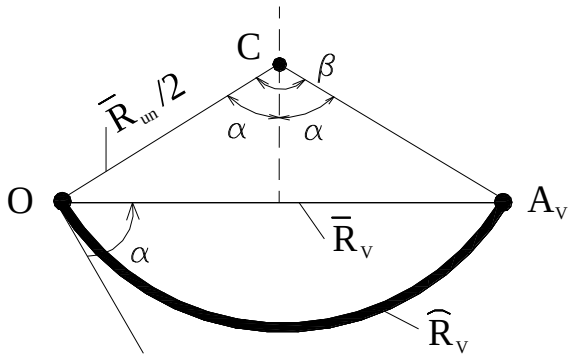


Fig. IV-6

$$\beta = 2\alpha; \qquad \hat{R}_{un} = \frac{\pi}{2} \times \bar{R}_{un}$$

$$\frac{\frac{\bar{R}_V}{2}}{\frac{\bar{R}_{un}}{2}} = \sin\alpha \ \rightarrow \ \bar{R}_V = \bar{R}_{un} \times \sin\alpha$$

$$\frac{\hat{R}_V}{\hat{R}_{un}} = \frac{\beta}{\pi} = \frac{2\alpha}{\pi} = \frac{\alpha}{\frac{\pi}{2}} \qquad \rightarrow \qquad \hat{R}_V = \hat{R}_{un} \times \frac{\alpha}{\frac{\pi}{2}} = \frac{\pi}{2} \times \bar{R}_{un} \times \frac{\alpha}{\frac{\pi}{2}} = \bar{R}_{un} \times \alpha$$

$$\frac{\Delta\bar{R}_V}{\bar{R}_V} = \frac{\hat{R}_V - \bar{R}_V}{\bar{R}_V} = \frac{\bar{R}_{un} \times \alpha - \bar{R}_{un} \times \sin\alpha}{\bar{R}_{un} \times \sin\alpha} = \frac{\alpha - \sin\alpha}{\sin\alpha}$$

$$V = \sin\alpha \times c$$

$$V = H_0 \times \bar{R}_V \quad \text{- The Hubble's Law}$$

The Hubble's Law is valid only for "flat geometry universe". However, the real universe is curved one! The light coming from distant galaxies is traveling on the curved line $\hat{R}_V$, and not on the straight line $\bar{R}_V$. For close - to the earthly observer - cosmic light sources the ΔR_V is small, so, the Hubble's Law gives correct results about relation "distance – speed of expansion". For more distant cosmic light sources, however, $\Delta \bar{R}_V$ is big, so, the Hubble's Law doesn't do the right job. This discrepancy ($\Delta \bar{R}_V$) in determining the real distance to the distant cosmic light sources is the cause of the so-called effect of "acceleration" of the universe. In fact, there is no acceleration!

Luminosity of the light source (distant supernova, for example) is calculated by the formula:

$$I = \frac{E}{R_V^2},$$

Where,

E – energy (or power) of the light source,
R_V - distance to the light source.

The value of the faintness F can be calculated by the formula:

$$F = \left(\frac{E}{\bar{R}_V^2} - \frac{E}{\hat{R}_V^2}\right) \times 100, \%$$

If accept $E = 1$ (unit energy or unit power), we have:

$$F = \frac{E}{\bar{R}_V^2} - \frac{E}{\hat{R}_V^2}$$

But,

$$\frac{\Delta R_V}{\bar{R}_V} = \frac{\alpha - \sin\alpha}{\sin\alpha}$$

$$\frac{\hat{R}_V - \bar{R}_V}{\bar{R}_V} = \frac{\hat{R}_V}{\bar{R}_V} - 1 = \frac{\alpha - \sin\alpha}{\sin\alpha}$$

$$\frac{\hat{R}_V}{\bar{R}_V} = 1 + \frac{\alpha - \sin\alpha}{\sin\alpha} = \frac{\alpha}{\sin\alpha}$$

$$F = \frac{1}{\bar{R}_V^2} - \frac{1}{\hat{R}_V^2} = \frac{1}{\bar{R}_V^2}\left(1 - \frac{\bar{R}_V^2}{\hat{R}_V^2}\right)$$

if $\boldsymbol{R_V}$ =1 (unit distance)

$$F = 1 - \frac{\bar{R}_V^2}{\hat{R}_V^2}; \qquad F = 1 - \frac{sin^2\alpha}{\alpha^2}$$

$$\sin\alpha = \frac{V}{c}; \quad \alpha = arc\sin\left(\frac{V}{c}\right)$$

$$F = \left\{1 - \frac{\left(\frac{V}{c}\right)^2}{\left[arc\sin\left(\frac{V}{c}\right)\right]^2}\right\} \times 100, \%$$

- ***Chukanov's Formula***!

Let consider two real, observed, cases:

#1 *Sne* I_a Supernova

Z = 0.5; faintness ***F*** = approx 25%

$$0.5 = \frac{1}{\sqrt{1 - \frac{V^2}{c^2}}} - 1; \qquad \frac{V}{c} = 0.746 = \sin\alpha; \qquad \alpha = 48.3° = 0.843\ rad$$

$$F = \left(1 - \frac{0.746^2}{0.843^2}\right) \times 100 = 22\ \%!$$

- Close to the observed value of 20-25 %!

#2 High *Z* Supernova

Z = 0.9; ***F*** = ? (unknown by me);

$$0.9 = \frac{1}{\sqrt{1-\frac{V^2}{c^2}}} - 1\ ; \qquad \frac{V}{c} = 0.85 = \sin\alpha\ ; \qquad \alpha = 58.2° = 1.015\ rad$$

$$F = \left(1 - \frac{0.85^2}{1.015^2}\right) \times 100 = 28.8\ \%\ !$$

The value of the observed faintness can contain some systematic errors as:

- Error in determination of the red shift
- Portion in the value of the faintness ***F*** can be due to the intervening dust screening the light coming from the supernova; however, the color measurements that would show color-dependent dimming for most types of dust indicate that dust is not a major factor.
- Might the type $\boldsymbol{I_a}$ supernovae have been intrinsically fainter in the distant past? Spectral comparisons have, thus far, revealed no distinction between the exploding atmospheres of nearby and more distant supernovae.
- Errors due to the deformation of the *Protonic Matter Universe* – 2D manifold.

The last kind of error could be also a major factor in the value of the observed faintness. See Figure IV-7.

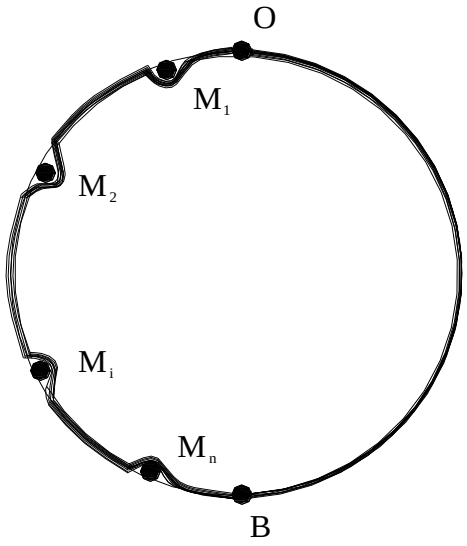


Fig. IV-7

The curved line $\widehat{R}_V$ is curved additionally by the presence of local gravity masses (galaxies, clusters of galaxies, quasars,…). This factor contributes to the value of the faintness ***F*** much less than the curvature of the *Protonic Matter Manifold;* the space separating the earth's observer and distant supernova is almost empty of gravity mass. We can estimate this contribution roughly +10%. Hence, for the considered supernova we have:

Case # 1:

$F = 22\,\% + 0.1 \times 22\,\% \approx 24\,\%$ - Close to the observed value!

Case # 2:

$$F = 28.8 + 2.88 \approx 32\,\%$$

The maximum value of the faintness ***F*** is for ***V = c.***

$$V = c; \quad \alpha = \frac{\pi}{2}; \quad \sin\alpha = 1$$

$$\frac{\Delta\bar{R}_V}{\bar{R}_V} = \frac{1.57 - 1}{1} = 0.57$$

$$F = \left[\frac{1}{1^2} - \frac{1}{(1.57)^2}\right] \times 100 = 59.4\,\%$$

Plus 10 %:

$\boldsymbol{F_{max}} \approx 65\,\%$!

Let deduct direct formula for ***F = f (Z)***:

$$Z = \frac{1}{\sqrt{1 - \frac{V^2}{c^2}}} - 1; \qquad Z + 1 = \frac{1}{\sqrt{1 - \frac{V^2}{c^2}}} - 1$$

……

$$\left(\frac{V}{c}\right)^2 = \frac{Z^2 + 2Z}{(Z+1)^2}$$

$$F = \left\{1 - \frac{\left(\frac{V}{c}\right)^2}{\left[arc\sin\left(\frac{V}{c}\right)\right]^2}\right\} = \left\{1 - \frac{\frac{Z^2 + 2Z}{(Z+1)^2}}{\left[arc\sin\left(\frac{Z^2 + 2Z}{(Z+1)^2}\right)\right]^2}\right\} \text{ x } 100, \ \%$$

Where,

$$\frac{Z^2 + 2Z}{(Z+1)^2} = \left(\frac{V}{c}\right)^2 = (\sin\alpha)^2$$

As we see from the above analysis, the faintness of the distant cosmic objects is not due to some mysterious acceleration in the universe's expansion. Instead, this faintness is due to the curvature of the universe. The geometry of the universe is not flat, as considered by the contemporary official cosmology!