STUDY OF BIANCHI TYPE-I IN METRIC AND FIELD EQUATIONS

Dr. R. K. Dubey[1], Brajesh Vikram Shukla[2], Shishir Kumar Srivastava[3]

[1]Associate Professor of Mathematics, Government Science College, Rewa (M. P.)

[2]Research Scholar, Government Science College, Rewa

[3]Research Scholar, Government Science College, Rewa (M.P.)

[1]**Email:**dubeyrk2009@gmail.com

[2]**Email:**brajeshvikram79@gmail.com

[3]**Email:** Shishir9918825052@gmail.com

Abstract

In the Saez-ballest gravity hypothesis, a scalar dimensionless field in which the measure is connected only Due to this type of coupling, the fourth scalar is formed, providing the idea of dimensionless an accelerated expansion system or a propulsion system that provides sufficient clearance for fragile areas. The ideal fluid for a Type I white universe in his presence is explained by Einstein saying that different cosmologically consistent field conditions are related to the capacity of the cosmological term Hubble square. Many scientists have done this lately He proposed the standard for converting the thickness of the vacuum into an upward curvature configuration, which depends on the evaluation of the quantum field. Asymptotic, cosmological meaning is valid for legitimate cosmological harmony and valid for allegory in an unstable world. The perception that the river universe is accelerating according to the cosmological hypothesis with a notable expansion of the cosmological mass of completely different scientists has been preserved here by a corresponding cycle.

KEYWORDS: Bianchi type- I & V, Distance parameters, Perfect fluid, ΛCDM model, cosmological model, deceleration parameter.

1. INTRODUCTION

One of the most surprising logical insights of recent events is the unfolding of the cosmological puzzle, which excites the entire analyst with extraordinary enthusiasm. Einstein was the first to recognize cosmological consistency in field conditions. In an evolving situation, it is not surprising to see stability as time within the track. In the spherical relative hypothesis of a quantum universe, the parent term actually appears as the vacuum force thickness. Someone among his reflection on what all researchers [5-9] had done. Some experts have analyzed cosmic models of variable G, to obtain a homogeneous and isotropic structure of the FRW condenser device. White Form I images are regularly tested using factors, and G. Schutzhold recommends the final thickness vacuum viability, equal to the Hubble boundary, making the vacuum viability equal to the inter- matrix viability amplitude of the chiral transmission CDQ. Borges et al. Carnerio also comprised of isotropic and homogeneous level problem loaded with a space, and by H and gap cosmological represented by the state observations. The Bianchi Type I anisotropic model has been recently analyzed using a number of terms. Explored that cosmic models are clear and sophisticated, Tiwari and Sonia are not shear as the ropes of Bianchi Form III consistency. Tiwari and Sonia have also studied the type I string cosmalogical model, with Bianchi's apparent less consistency and temporal articulation. Anisotropy of the perception of other universes on to analyze the likely impact for, some experts have Type II white screens with a particular point of view was examined. In this proposal, we investigate Bianchi Type I homogeneous anisotropic space - time with variable information relative to a spherical environment. We get the reactions of the conditions in the field, Einstein claims Hubble limit inflexible cosmological problem is that the rules relative.

2. METRICS AND FIELD EQUATIONS

The line unit for spatially homogeneous and anisotropic spacetime type I White has the following properties:

$$ds^2 = -dt^2 + A^2dx^2 + B^2dy^2 + C^2dz^2 \qquad (1)$$

There are elements A, B, C, t, so to speak.

It agreed interstellar life energy issues are dealt with by the tensor a complete liquid

$$T_{ij} = (\rho + p)v_i v_j + pg_{ij} \qquad (2)$$

And p are the thickness of the vitality and thermodynamic weight, and the fluid filling the junction has a four-phase vector. We expect content in question meets the state requirements.

$$p = \omega\rho, 0 \le \omega \le 1 \qquad (3)$$

Einstein's conditions for various units are suitable

$$R_{ij} - \frac{1}{2}Rg_{ij} = -T_{ij} + \Lambda g_{ij} \qquad (4)$$

The volume of area V can be characterized as using a normal scale factor model (1).

$$V = R^3 = ABC \qquad (5)$$

In anisotropic models, the Hubble boundary can be represented as

$$H = \frac{\dot{R}}{R} = \frac{1}{3}\left(\frac{\dot{A}}{A} + \frac{\dot{B}}{B} + \frac{\dot{C}}{C}\right) \qquad (6)$$

When an apartment is the standard time child of that amount

$$H = \frac{1}{3}(H_1 + H_2 + H_3) \qquad (7)$$

where $H_1 = \frac{\dot{A}}{A}, H_2 = \frac{\dot{B}}{B} and H_3 = \frac{\dot{C}}{C}$

Hubble capacity in corresponding x, Y, and Z beds.

The field condition (4) specifies the coordinate plane to displace metric (1) and a second vitality tensor (2).

$$\frac{\ddot{B}}{B}+\frac{\ddot{C}}{C}+\frac{\dot{B}\dot{C}}{BC}=-p+\Lambda \qquad (8)$$

$$\frac{\ddot{A}}{A}+\frac{\ddot{C}}{C}+\frac{\dot{A}\dot{C}}{AC}=-p+\Lambda \qquad (9)$$

$$\frac{\ddot{A}}{A}+\frac{\ddot{B}}{B}+\frac{\dot{A}\dot{B}}{AB}=-p+\Lambda \qquad (10)$$

$$\frac{\dot{A}\dot{B}}{AB}+\frac{\dot{B}\dot{C}}{BC}+\frac{\dot{A}\dot{C}}{AC}=\rho+\Lambda \qquad (11)$$

An Einstein tensor, as for the decryption part, we have

$$\left[\dot{\rho}+(\rho+p)\left(\frac{\dot{A}}{A}+\frac{\dot{B}}{B}+\frac{\dot{C}}{C}\right)\right]+\dot{\Lambda}=0 \qquad (12)$$

Not gradually lost from tensor cutting σ ij is, characterized by; $\sigma_{ij}=u_{i;j}+u_{j;i}-\frac{2}{3}g_{ij}u_k^k$ can be obtained as

$$\sigma_1^1=\frac{4}{3}\frac{\dot{A}}{A}-\frac{2}{3}\left(\frac{\dot{B}}{B}+\frac{\dot{C}}{C}\right) \qquad (13)$$

$$\sigma_2^2=\frac{4}{3}\frac{\dot{B}}{B}-\frac{2}{3}\left(\frac{\dot{C}}{C}+\frac{\dot{A}}{A}\right) \qquad (14)$$

$$\sigma_3^3=\frac{4}{3}\frac{\dot{C}}{C}-\frac{2}{3}\left(\frac{\dot{A}}{A}+\frac{\dot{B}}{B}\right) \qquad (15)$$

Therefore, the scalar cut σ is given by

$$\sigma^2=\frac{1}{3}\left(\frac{\dot{A}^2}{A^2}+\frac{\dot{B}^2}{B^2}+\frac{\dot{C}^2}{C^2}-\frac{\dot{A}\dot{B}}{AB}-\frac{\dot{B}\dot{C}}{BC}-\frac{\dot{A}\dot{C}}{AC}\right) \quad (16)$$

$$\therefore \frac{\dot{\sigma}}{\sigma}=-\left(\frac{\dot{A}}{A}+\frac{\dot{B}}{B}+\frac{\dot{C}}{C}\right)=-3H \quad (17)$$

The Einstein field conditions can be combined into (8) - (11) Hubble limit, cut-off scalar ÿ and presentation limit q.

$$H^2(2q-1)-\sigma^2=p-\Lambda \quad (18)$$

$$3H^2-\sigma^2=\rho+\Lambda \quad (19)$$

OR

$$q=-1-\frac{\dot{H}}{H^2}=-\frac{R\ddot{R}}{\dot{R}^2} \quad (20)$$

According to the equation. We take (8), (9) and (10) and integrate it,

$$\frac{\dot{A}}{A}-\frac{\dot{B}}{B}=\frac{k_1}{ABC}=\frac{k_1}{R^3} \quad (21)$$

$$\frac{\dot{A}}{A}-\frac{\dot{C}}{C}=\frac{k_2}{ABC}=\frac{k_2}{R^3} \quad (22)$$

$$\frac{\dot{B}}{B}-\frac{\dot{C}}{C}=\frac{k_3}{ABC}=\frac{k_3}{R^3} \quad (23)$$

Here k1, k2, k3 are consensus constants. Currently maintaining the viability of the conditions agreed we, that the Tijani = 0 gives

$$\dot{\rho}+\rho(1+\omega)\left(\frac{\dot{A}}{A}+\frac{\dot{B}}{B}+\frac{\dot{C}}{C}\right)=0 \quad (24)$$

Using equality. (5) and (24) we get

$$\rho=\frac{k_4}{R^{3(1+\omega)}} \quad (25)$$

Here is the connection point between k4 stability. Equation Again. (21) - (23) we understand

$$\frac{A}{B} = m_1 \exp\left(k_1 \int \frac{1}{R^3} dt\right) \quad (26)$$

$$\frac{A}{C} = m_2 \exp\left(k_2 \int \frac{1}{R^3} dt\right) \quad (27)$$

$$\frac{B}{C} = m_3 \exp\left(k_3 \int \frac{1}{R^3} dt\right) \quad (28)$$

Here m1, m2, m3 are the regulation constants. From equation (20) we obtain

$$\frac{3\sigma^2}{\theta^2} = 1 - \frac{3\rho}{\theta^2} - \frac{3\Lambda}{\theta^2} \quad (29)$$

Also, at the same time everywhere positive expansion, anisotropy can disrupt the extreme limits, a negative estimate of a place in the present leaves more space for the anisotropy. Eq. : - Equation. (29) It can be registered as:

$$\frac{3\sigma^2}{3H^2} = 1 - \frac{\rho}{3H^2} - \frac{\Lambda}{3H^2} = 1 - \frac{\rho}{\rho_c} - \frac{\rho_v}{\rho_c} \quad (30)$$

Here the thickness is between the base and pV = λ is the thickness of the gap.

$$\frac{d\theta}{dt} = -\frac{3}{2}(\rho + p) - 3\sigma^2 \quad (31)$$

This indicates that the volume increase is a certain time in the presence of a negative-induced decrease in the rate of decay, and a positive decay decreases after movement. For the equation. (19) and (20) and (19)

$$\Lambda = (2-q)H^2 - \frac{(1-\omega)\rho}{2} \quad (32)$$

This means: Qawe for 2 Qawe 0, I eqnsyste. (3) the situation now. (8) - (11) with five fair conditions in six questionable amounts : A, B, C, ÿ, pe p. Therefore, an additional condition is required to effectively repair the device. For this, we received Hubble scale cosmological terms of money, as was urged to reduce some scientists. Schutzhold [26], Borges and Carnerio R. adhere to the law of various vacuum thicknesses. The cosmological hypothesis corresponds to K.Tiwari and Divya Singh Tiwari and Sonia, H. Except for the limited vitality that we carry in space

$$\Lambda = \beta H^2 \quad (33)$$

Idealistic consistency is ß. Let be the ratio between the total space and the whole problem. For the equation. (19) and (33) we get,

$$\beta = \frac{3\Omega}{1+\Omega}\left(1-\frac{\sigma^2}{27\theta^2}\right) \qquad (34)$$

Besides, in an anisotropic context, beta is more predictably isotropic significance. For a fixed liquid (approx = 1)

Eq. (18), (19) and (33) lead, a differential case,

$$\dot{H} + (3-\beta)H^2 = 0 \qquad (35)$$

Coordination we take

$$R = \left[(3-\beta)(c_1 t + c_2)\right]^{\frac{1}{3-\beta}} \qquad (36)$$

The connection is consistent where there are C1 and C2.

$$H = \frac{\dot{R}}{R} = c_1\left[(3-\beta)(c_1 t + c_2)\right]^{-1} \qquad (37)$$

$$A = \left[(3-\beta)(c_1 t + c_2)\right]^{\frac{1}{3-\beta}} \exp\left[\frac{2k_1 + k_2}{6\{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}}\right]$$

Thus size (1),

$$B = \left[(3-\beta)(c_1 t + c_2)\right]^{\frac{1}{3-\beta}} \exp\left[\frac{k_2 - k_1}{3\{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}}\right]$$

$$C = \left[(3-\beta)(c_1 t + c_2)\right]^{\frac{1}{3-\beta}} \exp\left[\frac{2k_2 - k_1}{2\{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}}\right]$$

$$ds^2 = -dt^2 + \left[(3-\beta)(c_1 t + c_2)\right]^{\frac{2}{3-\beta}} \left\{ \begin{array}{l} \exp\left[\frac{2k_1 + k_2}{3\{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}}\right] dx^2 \\ + \exp\left[\frac{2(k_2 - k_1)}{3\{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}}\right] dy^2 + \exp\left[\frac{2k_2 - k_1}{\{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}}\right] dz^2 \end{array} \right\}$$

For, this model is given thickness and scalar and scalar extension cutting, material, pressure p, cosmic term.

$$\rho = p = k_4 \{(3-\beta)(c_1 t + c_2)\}^{\frac{-6}{3-\beta}}$$

$$\Lambda = \beta c_1^2 \{(3-\beta)(c_1 t + c_2)\}^{-2}$$

$$\theta = \frac{H}{3} = \frac{c_1}{3}\{(3-\beta)(c_1 t + c_2)\}^{-1}$$

$$\sigma = (c_1 t + c_2)^{\frac{-3c_1^2}{3-\beta}} c_3$$

Between relations, vacuum and emission intensity is given

$$\Omega = \frac{\Lambda}{\rho} = \frac{\beta c_1^2}{k_4}\{(3-\beta)(c_1 t + c_2)\}^{\frac{2\beta}{3-\beta}}$$

The deceleration limit q is in this model

q = 2 - β

Thickness and vacuum viability are given by ρv and base thickness ρc.

$$\rho_v = \beta c_1^2 \{(3-\beta)(c_1 t + c_2)\}^{-1}$$

$$\rho_c = 3c_1^2 \{(3-\beta)(c_1 t + c_2)\}^{-2}$$

Volume and room

$$V = R^3 = \{(3-\beta)(c_1 t + c_2)\}^{\frac{3}{3-\beta}}$$

3. Cosmological model

Here, the Bianchi Type II series unit, the condition (1.3.16) is specified as absolutely anisotropic we make.

$$ds^2 = -dt^2 + A^2 dx^2 + B^2 dy^2 + C^2 dz^2.$$

The conditions of the Einstein field in the gravitational scalar tensor hypothesis (with unit velocity of light such as c = 1, for example) are taken as suggested by a constant gravitational variable at time G(t) and stationary cosmological alternatives (t).

$$R_{ij}-\frac{1}{2}Rg_{ij}-w\phi^{r}\left(\phi_{,i}\phi_{,j}-\frac{1}{2}g_{ij}\phi_{,k}\phi^{,k}\right)=8\pi G(t)T_{ij}+\Lambda(t)g_{ij},$$

where ϕ is the scalar field satisfying the equation

$$2\phi^{r}\phi_{;i}^{;i}+r\phi^{r-1}\phi_{,k}\phi^{,k}=0.$$

Here r is an arbitrary constant; w is a fixed fit without measurement. Comma and semicolon separately show the erroneous branch and common variables. Ti j transfer tensor life force for full extension of liquid

$$T_{ij}=(\rho+p)u_{i}u_{j}+pg_{ij},$$

Where are the usual definitions of a physical boundary.

Einstein field conditions (4.2.2), scalar field conditions (4.2.3) and typical condition of vitality protection TI j; j = 0 line variable (4.2.1) and move viability (4.2.4) attraction norm between saezballest is, discrete differential arrangement contains the following conditions:

$$\frac{\ddot{B}}{B}+\frac{\ddot{C}}{C}+\frac{\dot{B}\dot{C}}{BC}-\frac{1}{2}w\phi^{r}\dot{\phi}^{2}=-8\pi Gp+\Lambda,$$
$$\frac{\ddot{C}}{C}+\frac{\ddot{A}}{A}+\frac{\dot{C}\dot{A}}{CA}-\frac{1}{2}w\phi^{r}\dot{\phi}^{2}=-8\pi Gp+\Lambda,$$
$$\frac{\ddot{A}}{A}+\frac{\ddot{B}}{B}+\frac{\dot{A}\dot{B}}{AB}-\frac{1}{2}w\phi^{r}\dot{\phi}^{2}=-8\pi Gp+\Lambda,$$
$$\frac{\dot{A}\dot{B}}{AB}+\frac{\dot{B}\dot{C}}{BC}+\frac{\dot{C}\dot{A}}{CA}+\frac{1}{2}w\phi^{r}\dot{\phi}^{2}=8\pi G\rho+\Lambda,$$
$$\ddot{\phi}+\dot{\phi}\left(\frac{\dot{A}}{A}+\frac{\dot{B}}{B}+\frac{\dot{C}}{C}\right)+\frac{r}{2}\frac{\dot{\phi}^{2}}{\phi}=0,$$

and

$$\dot{\rho}+3H(\rho+p)=0.$$

Moreover, the uniqueness of covariates between the tensor due Einstein

$$8\pi G[\dot{\rho}+3H(\rho+p)]+8\pi\dot{G}\rho+\dot{\Lambda}=0,$$

Use the viability efficiency condition (4.2.10) while reducing the coupling (2.3.11) between g (t) and u (t). Since we have set with five autonomous conditions (4.2.5) - one (4.2.9) and one contingency with eight questionable factors viz (4.2.10). This is why, to close the technical between these factors can be considered coordinate with us to / limitations we need. We may want to use the physical constraints listed below in the current model:

1. Short-term modification to (I) and conference q limit

2. In length, (ii) the difference between constant weight G.

4. CONCLUSION

T = void volume V - C2 / C1 is small and t = scalar expansion - C2 / C1 is infinite. This universe is zero at an exponential rate an evolution rate is moving shows. Also the scale factor R = - C2 / C1 negative which means that space - when a feature of a shape of a peak in the first period. T = - c2 / c1 has bölümünde ©, Ã. After a while the scale factor R and spatial volume V increase, but the scalar expansion decreases, ie the rate of development decreases. After that, everything is usually free for t time. If time t seems negative, then everything is necessarily negative. Vision started there in the world, a very empty universe. This hypothesis can be predicted by the perception of many space experts. In general, studying Bianchi I contains a cosmological model of type inelastic fluid with a cosmological unity p = βH2. For a particular model, the deceleration limit q P = 2 at P = 0.2 is negative, negative and therefore decreases with increasing P. The cosmological term, initially very broad, has since expanded to a cautious cosmological constant based on late conceptions. Asymptotically the term invites the universe of the cube guardian.

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