On the initial chaos of the universe: using null deflection of perturbation element over flat geometry

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Abstract

While the flatness problem, $\Omega = 1$, has been one weighty stand in the modern cosmology to showcase incompetency of BBT, the theory of inflation - first pioneered by Alan Guth, CTP, MIT (current) - serves to accommodate it in the observed universe. Here, (a) FP is used as a skeleton to attempt for an altogether novel approach involving rudimentary perturbation theory to define what one may call as 'initial chaos', and (b) the corresponding approach is postulated to be lightly rigorous than the other frameworks which propose in the same domain.

Helmholtz' formulation of waves in compressed notations ($c, [c] \equiv 1$; μ: (0,3))[2] is taken to commence with. Then, a perturbation function is subtracted (arbitrary operation - thus, still depicts the concept) from the argument to (a) encompass the argument's pragmatic behavior in (1) and most essentially, (b) to evaluate it with respect to any variance with general perturbation element ϵ.

$$(\partial_\mu \psi)^2 - f(\epsilon) = 0 \tag{1}$$

Since variation with any arbitrary function essentially leads to variation with ϵ, the corresponding is expressed in (2). LHS for $\Omega = 1$ is pronounced to be 0 from the argument that the field ϕ[3], which is the intrinsic characteristic of

[1] The author seeks for collaboration to formalizing the following

[2] The reader must be consistent with either of the two flat geometry ($g_{\mu\nu} = 0$ for $\mu \neq \nu$) special-relativity metric conventions, $g_{\mu\nu}\delta_{\mu\nu} : (-\frac{1}{c^2}, 1, 1, 1)$ and $(1, 1, 1, -\frac{1}{c^2})$.

[3] $\phi = (\partial_\mu \psi)^2$

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the space-time, must be invariant with ϵ to maintain this eternal equilibrium over both general and local scales. Specifically for the local scale, even the slightest fluctuation (quantum) is prohibited by Ω.

$$\partial_\epsilon[(\partial_\mu \psi)^2 - f(\epsilon)] = 0^{4} \tag{2}$$

$$\frac{\partial f(\epsilon)}{\partial \epsilon} = \int_0^\epsilon \frac{\partial}{\partial \epsilon} \frac{(\epsilon - z)^{n-1}}{(n-1)!} f^{(n)}(z) d(z) = 0^{5} \tag{3}$$

Taylor's expansion for continuous 'z' is performed in (3). The integrand is imposed to be 0. This puts forward - as the scope for further research - the argument concerning the validity of (4). Correspondingly, the nature of $f(\epsilon)$ can be evaluated and claimed to be 'initial chaos'.

$$\frac{(\epsilon - z)^{n-1}}{(n-1)!} f^{(n)}(z) \neq 0 \tag{4}$$

Handsome deductions from this approach will provide easy mapping of physical variables to functions of ϵ. For instance, the same is performed for Ω here, i.e. for ρ.[6,7,8] Thus, this framework can be expected to involve less mathematical rigour - which is usually taken as a positive point considering the complexity involved in as obligatory construct as GR, 5-D GR, super-string theory, or such others.

[4] ϵ in ∂_ϵ must not be inferred as summation index

[5] 'n' signifies the degree of derivative; the corresponding summation is compromised in notations

[6] ρ is the mass-energy density of the universe

[7] $\Omega = \frac{(\rho)}{(\rho_c)} : \rho_c = \frac{3H^2}{8\pi G}$

[8] ρ_c can be derived either from Einstein's field equation, or in much more convenient manner from Freedman-Robertson-Walker equation