The First Bangs

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A distributed model of the Universe's genesis

Bucharest, Romania

Sixth edition, December 30, 2016

Updated: February 14, 2018

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1. Introduction

There are lots of very accurate data about our universe and its internal structure that have accumulated mostly from the observations of the last years. The measurements carried out by astrophysicists now generate, in my opinion, many results that are in contradiction with the current model (Big Bang) of the universe's formation. It also comes very clear that my previous model - a Big Bang generated by a supermassive black hole in an already formed universe - is no longer compatible with the current measurements. We have now a pretty good idea of the total quantity of matter existing in the observable universe (stars, cosmic gas clouds and dust, galaxies, not taking into consideration the black holes), and this value exceeds by several orders of magnitude the mass of the largest black holes discovered until now (around 20 billion solar masses). As a result, a new model of universe's genesis is needed today, and it should be compatible with the latest astronomical observations. Moreover, the full integration into the causal and deterministic framework of the "Prime Theory" [3] is a must. It will no longer be a multi-universe model this time; we may still call it the First Bang, proposing this way a ***single*** type of event that has created our Universe. What does this new model have to explain? It is only about the first moments of the formation of space and matter, and this is because the inflationary model seems to be satisfactory from a certain moment - the appearance of the structured matter - up to the present time, as it has been adapted by "The Universe" [1].

Data, assumptions and comments to start from in shaping the new model:

a) We still are in the Prime Theory's premises area, where space has a granular component (material) and a geometric one (framework).

b) The total quantity of visible matter (structured), compared with that of all supermassive black holes.

c) The assumption that the supermassive black holes from the beginning of the universe could not increase so much in a relatively short time, but in fact, they were born directly this size. They shall still be regarded as some huge granular agglomerations, the same way "The Universe" [1] described them in detail, but they have some new features which will make them distinct from the "normal" ones (resulting from collapses of regular stars).

d) The hypothesis that the density of granular space has had a maximum value in the beginnings, then it decreased continuously over time - as it also does now (within the isotropic frame of the closed universe). This assumption rests on at least two important findings:

- the spontaneous emergence of quarks during the first seconds of the universe (relatively big particles that were maintained stable over time inside composite particles and which could no longer spontaneously appear now).

- the redshift of light coming from the distant galaxies, which is explained by the current physics especially by the galaxy movement (Doppler effect) and by the "expansion" of space between them and observers during the long periods of time those photons have travelled.

e) The observation of a high degree of uniformity in the intensity of all gravitational fluxes, along every space direction - at a given moment. As long as the influence of the big cosmic bodies on the distribution of granular flows (they reflect and diffuse) is dependent on the square of the distance (the so-called "gravity"), the flow's variation at a certain distance will get below a fixed value, i.e. this variation will be negligible.

f) The new estimate of the number of observable galaxies is around 2 trillion [4], 10 times higher than it was previously thought.

g) The observation that the rotation plans of spiral galaxies, assumed to be determined by the rotation plan of their central black hole, do not intersect in a common point - and thus they are not reflecting a common, central point of origin, i.e. a radial direction of an initial linear momentum.

h) A very recent analysis, still controversial, regarding the brightness of some supernovas suggests that the expansion of the universe is not accelerating, as previously assumed.

2. Additional Assumptions

There are two important assumptions to be mentioned now:

- The units of measurement that are used for all physical quantities described at the beginning of the universe are abstract; they have absolute values and they will bear here the same names as the current ones. However, in the definitive relativity we face inside a dynamic and closed universe, any units would be used, they will always be the subject of a perpetual uncertainty upon their values.

- As it is stated in the "Prime Theory" [3], the space does not expand in itself, only new zones are added to the edges of the sphere it supposes to form. However, its granular density changes over time, being affected by at least two components: the total number of granules in relation to the size of the three-dimensional space (definition), and also by the number of the free granules that were integrated into particles (i.e. in structured matter, where photons are nor included). The consequences of the granular density variations in time are numerous, but one of the most important to an observer is the speed of light in vacuum. The trait of absolute of the granular speed ***C*** automatically implies that the velocity of photons is also absolute, meaning an absolute direction and a constant speed value - in areas of constant granular density.

3. The speed of photons

In order to perform this calculation, a space cube of side ***l*** (having a big value, expressed in granular diameters ***d***) will be considered, which contains n^3 granules that are moving inside. Other quantities have been denoted as follows:

C - the absolute granular speed, a constant

v - the current speed of photons

ρ - the linear granular density (n/l), ρ < 1, includes the collision probability

τ - the average time of a granular collision, τ ≥ 1/C, a constant

After simple calculations we will obtain the formula of the absolute speed of photons:

$$v = C / (1 + \rho \tau C)$$

It is very easy to see that this speed value is always lower than the constant ***C***, and it is not having a linear dependency with the granular density - as depicted in Figure 1.

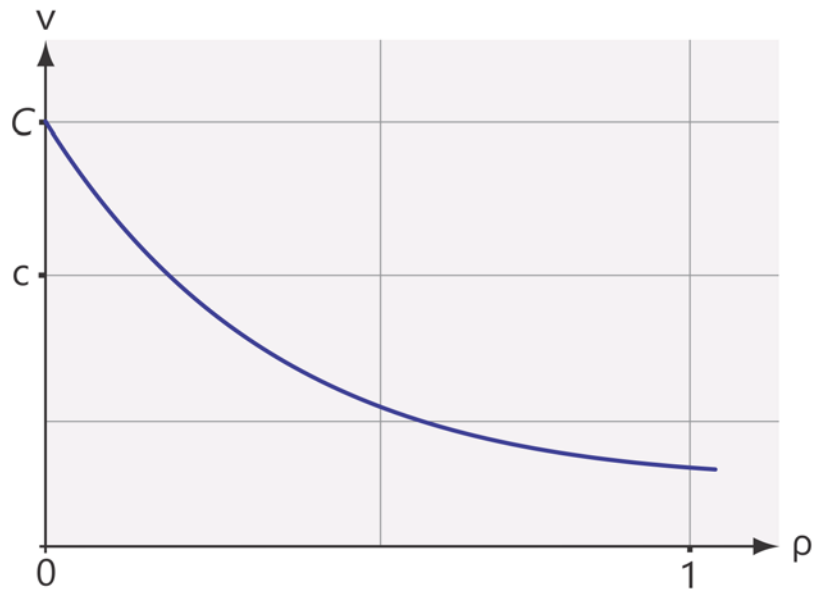

Figure 1 - *The speed of light variation with the granular density*

Both speed of light and granular density will therefore have a significant variation in time, as it is reflected (ideally) in Figure 2 from year 0 to 14 billion, where some changes in density were ignored (at the appearance of material structures and at particles-antiparticles annihilation moments). We considered the case of a spherical universe, closed, having a constant number of granules, and whose radius linearly increases in time. A similar graphical representation is obtained if the horizontal axis would be the distance travelled by light.

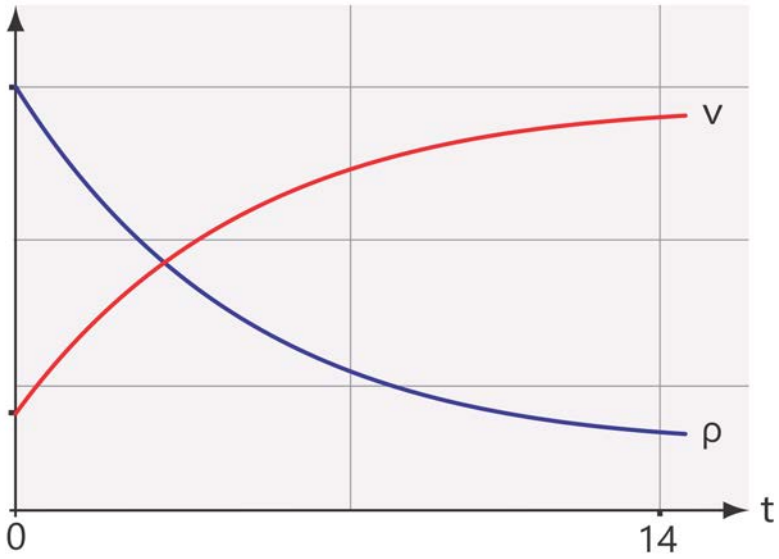

Figure 2 - *The change of speed of light and of granular density in time*

Remark. The laws of physics for material structures are invariant in time. What changes in time, with the decrease of granular density (and hence of the intensity of fluxes), are the absolute values of the physical quantities and constants that were involved in the mathematical formulas describing their connections. It would have been a real cosmic beauty if all these measures were invariant or if they would change proportionally in time, but the reality of our universe has a different dynamics.

4. The decrease of granular density

A few consequences of the granular density decrease (the fluxes' intensity is also decreasing) are presented below, where all physical quantities have absolute measures.

- The mass of all elementary particles will decrease (and implicitly of the structures they belong to). This will produce, paradoxically, a surplus of granules that will persist continuously in the area surrounding the massive bodies (stars, cosmic dust and galaxies). It simply results that the space around and inside galaxies will always have a higher granular density than the empty space (at equilibrium), which may be a good explanation for the gravitational lensing (and for "dark matter") produced by galaxies. This will add to the increase of granular density in vicinity of cosmic bodies due to the diffusion (omnidirectional reflection, which creates the "classic" gravity) of granular flows by their component atoms and molecules.

- The electric charge: it is very likely to decrease due to the reduced surfaces of particles.

- Time: seen as a resultant of the proper oscillation and vibration of particles, time will likely have a higher rate.

- The electric and magnetic fields: their intensity will decrease.

- Dimensions of bodies: they will increase due to the lower intensity of all fields.

- The speed of photons will increase as it was shown above.

As it was already stated, all these variations may not be measured as long as they have a common cause - the granular flows - which equally affects the metrics and the measuring instruments we are using. This generalized relativity, which makes all these variations to be unperceivable to observers and the measured values to be not absolute, still has a component that allows us to compare these quantities over extended periods of time. And this is due to the *finite speed* of light, a feature that is present at any moment in the history of the universe, to which we should add the huge distances the light can travel. This combination of things allows us to peer deep into the past, to see the formation of the first stars and galaxies, and even farther, up to the radiations that first particles have emitted.

5. Observations and analyses

Made in the light of the above statements, here are a few remarks about the interpretation of some astronomical data collected by astrophysicists until now, at the begining of the year 2017:

- most of the galaxies have a truly supermassive black hole in their center, a very "old" one, which actually formed and shaped those galaxies. Therefore, it is reasonable to assume that these special black holes (the prefix *proto* will be added to their name) were not born from a collapsed star, but they have a different birth mechanism. Even if the granular density would have been, let's say, ten times higher (the year is one billion) than it is now, the size of these proto-black holes (billions of solar masses) does not have a real theoretical justification in the current physics.

- the uniform distances between galaxies could not be justified by a "central" explosion, where the entire "energy" concentrated in that strange "singularity" will be evenly spread in space to this degree of uniformity.

- as stated in chapter 3, under the assumption of a higher granular density in the past, it is possible that the frequencies of light emitted by the first galaxies (one billion years old for example) may be different (a lot smaller) than those of today. If we coroborate this thing with the decrease of the granular density in time and therefore with the increase of the speed of light during its journey towards the today observers, we may conclude that the recorded redshift of the light coming from distant galaxies no longer means so big distances

and neither so big get-away speeds. The first consequence is that we need to recalculate the dimensions of the observable universe. Second, as the galaxies are not moving away and from each other the way we thought, the main justification for the Big Bang model and cosmic inflation is no longer valid and therefore this whole scenario has to be rethinked.

- the same thing happens in case of other radiations emitted at the begining of the universe, e.g. those of the 21-cm line (H), which now reach us with much higher wavelengths.

- interestingly, the Hubble's law is not seriously affected by the variation of the speed of light over time. The proportionality deducted for big cosmic distances is still valid, but their absolute values will decrease and should to be fixed with the new speed of light formula.

A more precise quantitative analysis should be made here, as the photons emitted at the beginning of the Universe have a different internal structure and they undergo several modifications on their way of billions of light years. For accurate information about the age and speed of distant galaxies - both deducted from the color of the received photons - some important factors should be taken into consideration in order to correctly adjust the cosmological data:

- the speed of light at the emission moment was smaller than it is today, as the granular density of space had a higher value in the past.

- the frequency of those photons, for a today-equivalent atomic transition (color), related to an identical rate of time, is smaller. This implies the first redshift of that light, which is only dependent on the respective galaxy's age.

- the original diameter of these photons is higher, and therefore they cannot transfer their entire energy to the actual, smaller electrons (and of a lower mass).

- the length of the photons emitted in the past may change significantly as the granular density of space decreases during their journey. It is expected as their internal structure to remain generally the same, but dilated along the direction of propagation; therefore, their intrinsic energy - related to density - remains unchanged over time.

- on receiving, as their wavelength has increased, these photons will have a lower frequency and apparently a lower value of energy.

A new mathematical model to describe the variation of matter parameters with the granular density over time becomes absolutely necessary. These formulas might compensate for the global relativization of physical quantities in time and thus we will be able to further compare data of the same kind, of absolute nature.

6. The distributed birth model

If it would expand by increasing in itself, the geometric space could not transport matter (any form) in this process and this matter still remains at relative rest. The theory of cosmic inflation cannot be accepted even for this single reason, but it postulates another unacceptable thing, namely that the space expanded in the Big Bang's first fractions of a second with superluminal speeds... However, the geometric space is not material stuff, yet it has been created in this explosion by the expanding "energy", and it would simply result that this strange energy does not have a speed limit! Furthermore, the existence of an infinitesimal "singularity" of super concentrated "energy" ... does not quite fit into the framework of a causal and uniform physics (which would be normal and applicable at any moment), even at a speculative theoretical level.

Due to the observations and assumptions mentioned above, an alternative birth model may be described now, where all of the astronomical measurements will be included and respected, even in the absence of a mathematical formula for the granular density decrease and for the absolute variations it induces to the other physical quantities.

As long as we are not able to define the primordial "nothingness" (The Universe [1]) - due to both principled causes and the lack of concrete references - being the source of the empty space and of the granular matter, the initiating process of cosmic genesis will actually remain out of logical and energetical reasons. In order to compensate this and to introduce coherence in the new distributed birth model, a few other assumptions will be added now, changing a little bit some of my previous model's hypotheses.

a) The primordial "nothingness" will be considered from now on as a primordial "something", namely an elementary form of matter in a certain state, which already occupies a certain "place" and contains mechanical energy. Whether or not the sum of matter and space is zero (i.e. these two physical components have emerged from nothing) represents an issue that will remain open for debate for long. Similarly, the dimensions (amount) of this raw material are they infinite or not? Whatever its size would be, this primordial material - which will hereinafter be referred as "*essence*" - has two special features: perfect elasticity and three-dimensional form (the white background of Figure 3A).

b) The essence, which may now be imagined as a uniform and very dense "cloud", undergoes a continuous process of expansion and therefore its density may reach a minimum value, a threshold below which this raw material can no longer hold the internal cohesion (Figure 3B).

c) This process of expansion produces at that moment a multitude of "ruptures" in the fabric of the essence, i.e. some tiny spherical holes, uniformly distributed, which are expanding themselves along with the raw material (Figure 3C).

The assumptions above actually represent the initial stages of the cloud *implosion* events and they prefigure a distributed process that gave birth to our granular universe. What happens next inside these hypothetical empty spheres? And what are they exactly?

Obviously, these formations actually represent volumes of absolutely empty space, i.e. what remains there after the raw material withdraws. We cannot define now all properties of these things, but it may be stated that they are the source of *space* as we know it, uniform and isotropic, where matter of any kind can move freely. From a geometric point of view, it may be perceived as being a three-dimensional framework of Newtonian type, perfectly linear, which does not interact with matter in any way. Unfortunately, at this moment we cannot affirm that space is infinite or not, nor that it would have existed anyway - in the absence of the primordial matter - as a "place" or as a truly fundamental "nothingness", being support for any material thing that might exist.

Note. If the space would have been there anyway - assimilated this time with the absolute nothingness, and if the amount of essence would be finite, we then could be able to evaluate the existence of other universes that came out from other primordial clouds - but we are not ready yet to speculate so far.

Each of these spheroids will further undergo a *First Bang*, a new phenomenon rather similar to a *localized implosion,* which occurs almost simultaneously throughout the entire volume of the essence, at a very high, but finite speed (we cannot compare it now with the speed of light). Here are some specific characteristics of this distributed process that has generated the space and matter:

- These primordial "bubbles" of space, i.e. the "empty" spheres that have appeared all over the essence's body, are almost evenly distributed; they will continuously grow in volume with a presumed constant speed.

- The whole surface of these "bubbles" goes through a change of state (we can call it division); the essence from these areas undergoes a transition from a contiguous-type material to a granular one. This phenomenon, if we are to compare it with something common, is quite similar with the well-known evaporation process of a liquid that reached the boiling point. In other words, the essence-space interface will continuously generate granular fluxes that are normal on the tangential plane to the emitting surface (Figure 3D, where you can see these fluxes).

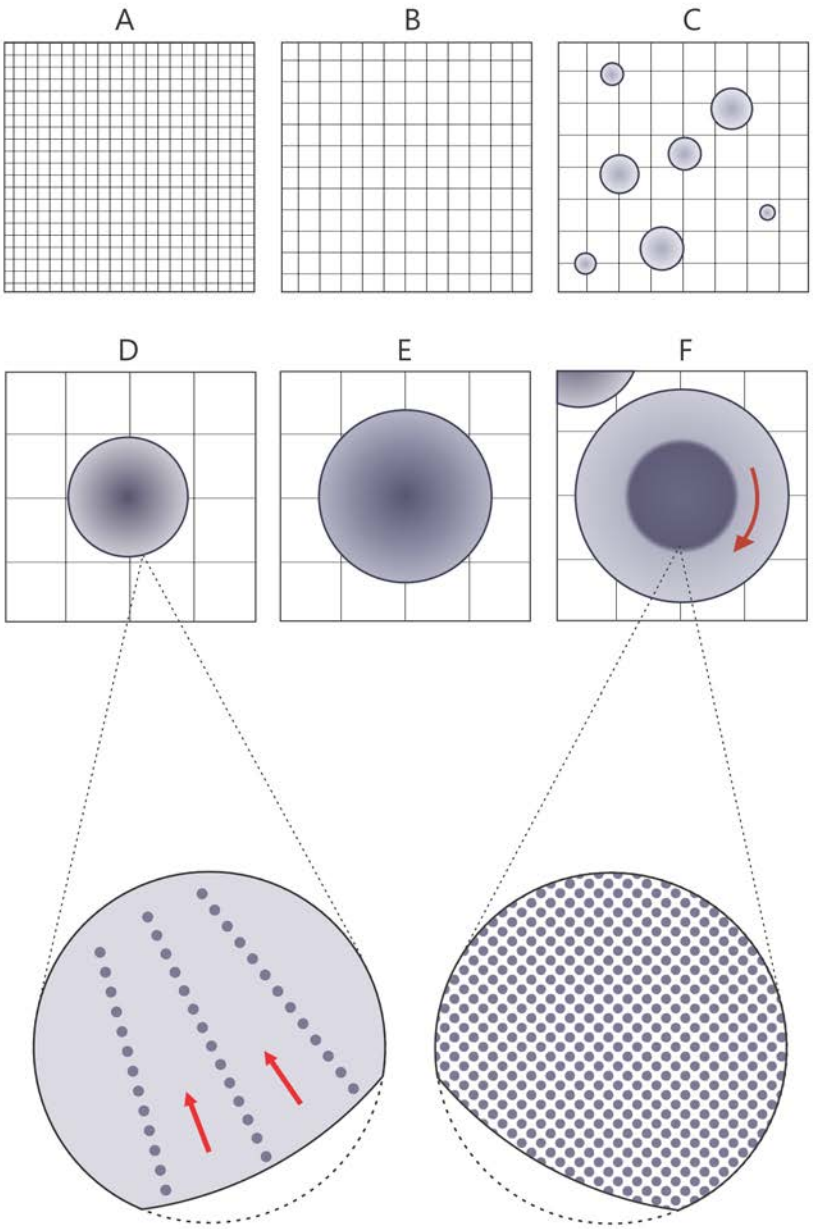

Figure 3 - *The initial stages of a First Bang*

- The omnidirectional, very dense granular fluxes will start to flow shortly, concentrating into the center of the sphere of space, and their granules begin to bump into each other. Due to the extremely high granular density reached in this area, all the incoming fluxes will curve and will converge towards the center. Therefore, many vortexes will form in this granular material of maximum density (via a process similar to the formation of elementary particles, but the scale is much higher), which will then concentrate in a central zone (Figure 3F). Taking into account the granular unevennesses, these vortexes will soon get a global

movement of rotation in the dominant direction at that time. A "solid" body is born this way, which will continuously increase in size by the new fluxes' contribution, until a state of equilibrium is reached (equality between centrifugal forces and the external pressure).

- These granular structures are in fact the proto-black holes of our universe, the primordial supermassive formations that were born directly ***big,*** which will soon gather the nearby clouds of structured matter. They will further grow by accretion, "eating" the gaseous matter around and other nearby stars, but not significantly. It is likely that their diameter will additionally increase with the decrease in intensity of the granular flows.

- Each of these "bubbles" of space will grow and, at a given moment, will merge with the adjacent ones; this will eventually form a single, huge bubble, *the space*, an empty volume that is only populated by the black holes. Their granular flows will also join together, getting even in a relatively short time. This scenario of our universe's birth may have two different continuations, depending on the size of the primordial cloud of essence:

1. Infinite size - in this case is no longer relevant whether the universe is open or closed, but we cannot justify the space expansion and the decrease of the granular density in time.

2. Finite size - in this case we can make a distinction that has implications in its future:
   a) Closed - the most likely case. The granular material is no longer generated (the number of granules and their energy will be conserved), but the granular pressure will determine a continuous expansion of space - which justifies the rate of decrease of the granular density.
   b) Open - the granular material would have been spread continuously in the great cosmic emptiness, and the average density would drop much faster - the unlikely case.

Even if this birth model features a distributed process of creation, the universe formed this way supports all of the granular laws and postulates [3]. The total granular impulse is quasi-null in each embryonic zone of space, and therefore it will also have a quasi-null grand total at the merger moment and afterward.

A very important aspect is that the process described above contains, taking into account the uniqueness of the primordial cloud of essence, the intrinsic attribute of *absolute*. This natural attribute is inherited by the newly born universe, regardless of the distributed manner it was formed. The physics of this new universe will thus have an absolute spatial reference that must be reflected in any law and theory we draw, at any scale, in correlation with the intrinsic *relativity* imposed by the space uniformity [1].

Note 1. The gravity exerted by the proto-black holes, seen as perturbation in the local fluxes' distribution, has a maximum value and it no longer depends directly on the star's mass. As this value is only determined by the opacity and the diameter of stars (assumed spherical), the gravity they produce will no longer depend on their internal structure, which can therefore be reduced to an *empty* spheroid. In case the black hole expands with the decrease of the spatial granular density, this inner emptiness may also grow in size and the star's peripheral speed will decrease until the dynamic equilibrium is reached.

Note 2. This model of the First Bangs justifies a sort of macro granularity of space in the beginnings, taking into account that the proto-black holes were very distant one from the other (hundreds, millions of current light years) and they do not have big initial linear momenta. If there is a global expansion of all formed galaxies, this is only caused by the gravitational gradient that is present on very large cosmic distances.

Note 3. No more black holes may be formed through this mechanism; the special conjuncture - a huge granular density and a massive concentration of fluxes in a limited area - can never be repeated in the actual universe.

7. Conclusion

The model shown here has started mainly from this question: why a massive black hole is located in the center of most galaxies? Trying to answer that, this model has succeded to integrate my granular theory and all its laws, being same time in harmony with the newest celestial observations (of the distant galaxies and of the cosmic background radiation). Furthermore, the concept of absolute is also maintained in this case of distributed birth of the universe, being a key element in all the given explanations to the apparition and evolution of the structured matter. The First Bangs hypothesis has logical consistency while it starts from a very small number of assumptions, providing full explanatory grounds for the first moments of the universe's genesis and for its evolution laws. The new granular physics has helped us one more time to decypher the mysteries of the surrounding nature, allowing the development of this new model - complete, deterministic and rational - for the beginning of our universe.

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