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A Clear and Certain Path Replacing the Lambda Cold Dark Matter Model with a More Observationally Verifiable, and Much Less-Problematic Cosmology

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***Abstract* — At the greatest distances, what James Webb has already observed, and probably will continue to observe based upon our research, is believed by many to be contrary to mainstream cosmology's predictions concerning the most distant universe. One of the defining differences between the Big Bang model (BB) and prior steady state models (SS) in general was that SS models proposed that the observable universe was unchanging in its general appearance. But an unchanged appearance is what many now believe the James Webb is presently observing. In the decade of the 1960's, observations were believed to contradict a steady-state universe in that quasars and radio galaxies were only observed at great distances, none close by, and that the universe of galaxies, according to mainstream theory then, first began roughly 11.6 billion years ago. But in time, some of the believed advantages of Big Bang cosmology have become questionable based upon more recent observations. What was predicted before the James Webb went up seems to be continuously contradicted by James Webb observations. Instead, some believe that what we are observing with James Webb at the greatest distances appears to be very similar to the Hubble Deep field photos, and also similar to pictures looking inside local galaxy clusters, as would be expected if the observable universe were in a generally unchanging condition. This research study will explain the dozens of continuing problems of Big Bang cosmology, while it claimed advantages are no longer as clear. On the other hand, the alternative cosmology being presented has never experienced contradictions or added ad hoc hypothesis after many decades. Readers will decide whether Big Bang cosmology is being contradicted by the newest observations, whether the alternative cosmology being offered is much less problematic, and whether the many predictions of each cosmology is being confirmed or contradicted by the James Webb and other distant universe observations.**

***Keywords* —** alternative cosmology, astronomy, Big Bang problems, problem solving, quasars.

I. Introduction and Preview of Content

The primary objective of this paper is to consider the well-known acknowledged (probable or possible) problems with the Lambda Cold Dark Matter (ΛCDM) version of the Big Bang model (BB) and to show what we believe to be the correct path to solve these problems via an alternative cosmology. An alternative cosmology is then presented that by its analysis, provides possible, and hopefully correct solutions to these well-known problems, as readers will consider. The use of plural pronouns "we" and "our" in these writings relates to the author and one or more persons of the Pan Theory Research Organization that agree with the statements being made.

We will discuss steady state cosmologies, but most search-engine references only refer to Fred Hoyle's Steady State model, the most well-known of these models. This model includes both the expansion of the universe and the creation of new matter. Prior steady state models, and some since, do not include either, or if neither they are often referred to as static-universe models. But for the purposes of this paper, we use the words "steady state" to describe any cosmology that proposes that the observable universe is not evolving as a whole.

Sometimes links are also given in the text when the additional information might further clarified by longer explanations. What we predict will be "The Clear and certain path," is that the Lambda Cold Dark Matter model will have to be changed or replaced sooner rather than later because of present and future contradicting observations at the greatest observable distances, primarily by the James Webb Space Telescope (JWST). Following the mainstream problem section to follow, is the alternative cosmology section, called the Pan Theory of Cosmology (PTC). This section includes a nine-page summary, and its supporting links involve hundreds of pages of research, study, and theory.

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Following this, there is a short section regarding our predictions of what to expect from the JWST most-distant observations, and another section that is generally related but outside the purview of cosmology.

This short section is followed by our conclusions in regard to those interested in a replacement cosmology, with suggestions on how to proceed in analyzing such as cosmology regarding the BB problems presented, and in consideration of the present and predicted future observation anomalies expected concerning mainstream cosmology.

II. The Many Problems of Mainstream Cosmology

Mainstream Cosmology today proposes comprehensive explanations for a broad range of observed phenomena, including the abundance of light elements, the asserted evolution of the universe over time, and the asserted source of the cosmic microwave background radiation (CMBR), which claimed to have been accurately predicted before its discovery. But the theory also has recognized problems; some of the most well-known of these will be discussed here.

The overall many-times-verified uniformity of the universe, which also relates to the flatness problem of the BB model, is believed to have been explained by the many cosmic Inflation proposals, i.e., a sudden and very rapid expansion of space and energy plasma during the earliest moments of the universe. By the same means the so-called Horizon problem (discussed below) was also thought to have been resolved. However, BB cosmology no longer proposes an explanation for the very beginning of the universe which was originally considered a singularity. Newer observations have also brought further theory detail into question, which will be discussed.

A. The Lambda Cold Dark Matter Theory and Its More Recognized Problems

The link below discusses what many believe to be Big Bang (BB) problems of theory, some or most of which are recognized as problems by mainstream theorists. Nearly all of these problems do not exist with the alternative cosmology being presented. Many of these problems will also be discussed in further detail in the subsequent Pan Theory of Cosmology section of this paper [6]. These problems are discussed as well as their answers based upon the alternative theory presented below called the Pan Theory of Cosmology (PTC). Some of these answers are based upon our extensive research, and some are additionally supported by new observations by astronomers. Many readers will already know some mainstream explanations and answers for these problems. By reading the above link (unsolved problems of physics), readers can preview most of the problems to be discussed.

Following these asserted problems and alternative explanations, the proposed alternative cosmology is presented and explained in some detail. By this, readers can judge for themselves whether this alternative cosmology would eliminate many or maybe all of these discussed problems.

B. List of the More Well-Known Problems of Mainstream Cosmology

Explanations, answers, and comments offered here are in accord with the alternative cosmology, designated as being in accord with the Pan Theory of Cosmology (PTC). The answers presented, if valid, could explain away most of these asserted problems. But of course, they are not the only reasonable answers and explanations that could have been given. Some mainstream theorists and alternative-mainstream theorists have their own answers and explanations, as well as those of other alternative theories – and some would even say that few of these are real BB problems.

1) Dark matter

What is dark matter? Dark Matter is a hypothetical entity, a kind of place holder for an unknown force. Most believe that it is a particle (vast volumes of particles of an unknown type of non-baryonic matter) that has never been directly identified. What is it?

Answer APT: Non-baryonic Dark Matter has never been directly observed because it probably doesn't exist. Instead, the additional force influence within spiral galaxies and galaxy clusters that increase stellar velocities is a flowing vortex pushing force of the background field, the Zero Point Field (ZPF), a presently unrecognized force.

The proposal and equations explained in the links below result in "calculations that exactly match observations" [15], [17].

2) Dark energy

Dark Energy is the supposed source of the accelerating expansion of the universe, but what is its cause and nature?

Answer PTC: Like dark matter, Dark Energy also doesn't exist according to the peer-reviewed research paper [29]. It's believed existence is accordingly based upon the inaccuracy of the Hubble distance formula, which is assertedly wrong by at least 10% when calculating redshift distances at z ~ 0.6 by the alternative cosmology's equations [29.]

3) The Hubble Constant Controversy

In 2020 the so-called Hubble Constant Problem began to surface as another BB problem. Two different methods to measure its quantity have yielded results about 10% different from each other, but neither value falls within the error range predicted by the other method. The primary method of calculation is based upon direct measurements and related calculations, up to a redshift of about z = 1, where distances might also be tested by other methods of distance determination other than redshifts, part of the so-called distance ladder. This was the only method used to determine the Hubble constant of the BB model in the past, direct observational measurement. A second method was developed in the 1990's to determine the Hubble Constant. This method involves assumptions and interpretations of the cosmic microwave background radiation based on BB theory. Some have called this BB problem a cosmological crisis, which continues as an unexplained problem of BB cosmology today.

Explanation APT: The alternative model states that direct measurement is always better than measurement based upon theory, so the microwave background radiation calculation is less reliable since it is based upon both theory and measurement. The distance equation of the alternative model, as seen in the link above, requires no Hubble constant for its distance calculations. The bottom line of the problem, however, is two-fold. APT: The Hubble distance formula is wrong, and the understanding of the microwave background radiation is also wrong, as explained below in the PTC section.

4) The fine-tuning problem

The characteristics of the universe seem to be finely tuned suggesting that if any of the so-called free constants of nature, also called free parameters, were just a little bit different, the universe could then be totally different - and that life as we know it probably would not exist.

Answer APT: The so-called constants of nature, described as free parameters, are not free. Instead, they are interrelated to each other and with other parameters in presently unknown ways. If true, the universe can only exist in one form and condition, the condition we observe. This assertion is totally contrary to the Many Worlds interpretation of Quantum Mechanics as a more extreme example. Further explanations can be seen in [27].

5) Origin of the universe

How did the conditions arise that resulted in the creation and formation of the universe in the first place?

Answer APT: This question is simply based on false assumptions. The primary false assumption is that there were conditions that preceded the universe to cause its creation to start with, which according to the alternative theory below, there were not. The second false assumption is simply that the universe could exist in a form different from how we presently observe it, which is not possible according to the alternative theory.

6) Does the universe evolve and if so how, and what is its future?

Is the universe headed towards a Big Freeze, a Big Rip, a Big Crunch, a Big Bounce? Is it part of multiverse? – An infinitely recurring cyclic model, etc.?

Answer: The evolution of the universe is a very important difference of theory for mainstream cosmology. It was one of the three so-called advantages of the Big Bang model over a steady state universe, along with the Big Bang creation of the observed abundance of light elements, and the observed microwave background radiation, which was explained by a Big Bang event and was predicted before it was discovered.

According to the alternative cosmology, the observable universe is not evolving. It is in a steady-state condition with only local evolution cycles of stars, galaxies, galaxy clusters, etc. The observable universe, as well as the universe as a whole, accordingly would be vastly older and larger than what present theory and the Hubble distance formula could allow.

7) Cosmic inflation

Is the theory of cosmic inflation in the very early universe, correct?

Answer APT: The simple answer is no. Cosmic Inflation never occurred, nor is the universe or space expanding. Instead, matter is very slowly getting smaller: about 1,000th part every 7 million years. This is the cause of the observed galactic redshifts. The evidence for this is observed as fermion particle spin, which is real. Fermion-spin is now called angular momentum because they have no explanation concerning the source of energy for real particle spin, but the Pan Theory below does.

8) Horizon and flatness problems

Why is the distant universe so homogeneous when the Big Bang theory seems to predict larger measurable anisotropies of the night sky than those observed?

Answer: In the 1980's the primary acknowledged BB problems were the Horizon and Flatness problems which eventually resulted in a number of Inflation proposals that many believe solved these problems. Because an Inflation era could never be observed or tested, and because there was no basis for it in classical

physics, the use of Inflation theory to solve problems in cosmology was questionable based upon the scientific method. Some have called it Inflation metaphysics, to disparage and discourage the use of unobservable and untestable propositions in scientific theory, except for maybe speculative considerations prior to theory formation or changes.

9) Size of the universe

The diameter of the observable universe, according to BB theory, is about 93 billion light-years, but what is the size of the whole universe?

Answer APT: The simple answer is that the Big Bang model of the universe is wrong. Instead, the observable universe is in more of a steady-state condition, not infinite in size, but vastly larger and older than what is presently believed based on mainstream theory.

10) Baryon asymmetry

Why is there far more matter than antimatter in the observable universe? Could this be due to the asymmetry of longevity between matter and antimatter?

Answer APT: Yes, this is the correct answer. Antimatter has a half-life that can be counted in millions of years or less, rather than countless billions of years like protons. The alternative theory below explains why their half-lives are different.

11) Cosmological principle

Is the universe homogeneous and isotropic at the largest scales, as assumed by all models that use the Friedmann–Lemaître–Robertson–Walker metric, including the current version of the ΛCDM model?

Answer: Yes, the universe is generally isotropic, but its homogeneity is not consistent with the mainstream metric of the ΛCDM model. The Friedmann–Lemaître–Robertson–Walker metric simply doesn't apply since this metric is based upon Einstein's gravity equations, and not based upon expanding space which is the present mainstream explanation for an expanding universe. And according to the alternative cosmology, neither the observable universe nor space is expanding, as will be explained.

12) Copernican principle

Are cosmological observations made from Earth representative of observations from the average position in the universe?

Answer APT: Generally speaking, yes.

13) Cosmological constant problem

Why does the zero-point energy (ZPE and ZPF) of the vacuum not cause a large cosmological constant? What cancels it out?

Answer APT: The outward pushing forces of the Zero Point Field (ZPF) are the same as its inward pushing forces which we call gravity. So, the inward pushing forces of gravity generally cancel out any outward pushing forces; they are one in the same. The actual pushing forces of the Zero Point Field are a part of the gravitational constant 'G,' calculated using (1), which is a superfluid-like omnipresent aether atmosphere of sorts which is the source cause of gravity.

$$6.67 \times 10 - 11 \frac{Newtons}{m^2} \quad (1)$$

14) The dark flow

Are the galactic motions of this flow due to the gravitational pull from outside the observable universe responsible for some of the observed motion of large objects such as galactic clusters in the universe?

Answer: The Dark Flow has an unknown cause but is a common type of field flow caused by the pushing forces of the Zero Point Field, which can be seen in spiral galaxies, galaxy clusters, and all over the universe, but is presently unrecognized. Its influences are often attributed to gravity and dark matter. A number of observation examples of this field flow, other than in spiral galaxies and the dark flow, can be surmised from reading [17].

15) Shape of the universe

What is the "shape" of the universe? Neither the curvature nor the topology of the universe is presently known for certain, although its curvature is known to be zero or close to it at observable scales.

Answer APT: The universe appears to be flat, meaning that there would be no fourth physical dimension or warped space to it. Instead, the background Zero-Point-Field has density variations and field flows within it that are presently explained by the supposed warping of spacetime. The universe is generally spherical in form with three dimensional boundaries. Space is simply the distance between matter and the volume that matter, and field occupy and nothing more. Space does not exist beyond the boundaries of matter and the ZPF by this definition.

16) Are the Largest Structures of the universe contrary to mainstream cosmology?

The Sloan Great Wall is 1.38 billion light-years in length. And the largest structure currently known, the Hercules–Corona Borealis Great Wall, is up to 10 billion light-years across. Are these actual structures, or just random density characteristics?

Answer APT: Yes, these structures are real and are forms within the observable universe, a somewhat fractal kind of universe. The observable universe might be considered "just like a drop in the bucket," compared to the whole universe, yet it is still finite in every way.

Also, in a steady state universe, there would be a great deal more time available for such gargantuan structures to form.

17) The cosmic density problem

Why has there never been an acknowledged and journal-published study concerning the verification of the expansion of the universe? Cosmic density studies can be made with the technology of today's astronomy.

Answer APT: This BB problem has rarely been addressed by either astronomers or theorists since the theory began and remains a primary, if not the biggest BB problem since it relates to the theory's foundation premise, that the universe is expanding and therefore was denser in the past. However, the problem is that this premise has never been verified by any acknowledged or widely published large-scale density study. On the contrary, some observation studies have suggested that the universe was even less dense in the past.

Others have used hypothetical dark matter along with observations, trying to prove a higher matter density in the past – the results were unconvincing to most.

A denser universe in the past is a prime requisite of BB cosmology regarding an expanding universe without the creation of new matter, which distinguished it from Hoyle's Steady State theory, the proposed continuous expansion of space since the end of the hypothetical Inflation era.

18) The too thin universe problem

This problem is directly related to the Cosmic Density Problem explained above. The universe appears to have been too thin for galaxies and the observed large scale structures to have formed in the first place based upon gravity alone, within the limited time allowed by the Hubble distance formula, 13.8 billion years. What is the answer to this problem?

Answer APT: This is an older but more recognized problem that the universe of the past and present, based upon extensive observation studies, appears to be too thin to have created the observed quantities of galaxies and galaxy clusters in the first place based upon the expansion of the universe from the observable past. Many believe that not even a denser past universe of the Big Bang theory was even dense enough to have formed the plentitude of observable galaxies, or the known structures of the observable universe based solely upon gravity, within the Hubble restricted age of the universe, even with the inclusion of hypothetical dark matter. Some consider this one of the biggest BB problems. It is also called the "Cosmic Tension" [8].

19) The Predicted abundance of light elements

The mathematics of this hypothesis was originally formulated for predictive purposes based upon a singular Big Bang event which is no longer part of the theory. Although a number of its predictions are close to being correct even today, other aspects of it are less accurate and more problematic. Can this hypothesis still be justifiably used based upon the different creation-of-matter events proposed by the ΛCDM model? – if so, can these predictions be justifiably improved?

Answer APT: The original theoretical physics concerning the creation of light elements was ad hoc, based upon theory with the abundance of the light elements already known at the time of its "predictions." This ad hoc characteristic of the theory was also a criticism of it by Hoyle and other steady state proponents at the time of its creation. It was an advantage over Hoyle's steady state theory because nuclear fusion theory does not explain why these observed abundances exist.

The alternative Pan Theory of Cosmology, below, also explains as part of its theory, that nuclear fission and fusion events at the bases of galactic jets also explain the abundance of light elements. If more ad hoc theory is needed to quantify these abundances for any theory, better proposals can now be contrived because more accurate percentages of these abundances are now known.

20) The axis of evil

Some large features of microwave background radiation (MRB) coming from events believed to have happened over 13 billion years ago appear to be aligned with both the motion and orientation of our solar system. Is this due to systematic errors in processing, contamination of the results by local effects, or an unexplained violation of the Copernican principle?

Answer APT: Contrary to the Big Bang model, the MBR is not cosmic in origin and instead relates to local temperatures within our galaxy. When looking at the night sky, more often in the southern hemisphere, the night sky appears brighter in the direction of the observable arm of the Milky Way, part of the plane of our galaxy. A brighter sky in outer space has a slightly higher temperature to it, a small but significant

difference. All matter radiates EM radiation, but for the intra and extragalactic fine-grained matter of space, this radiation is in the microwave spectra (very faint, low temperature radiation), which according to this proposal is the source of the observed MBR. It is the local temperature of our part of the galaxy. For instance, the Milky Way core temperature of interstellar fine-grained dust and atomic matter, the MBR temperatures there should accordingly be at least several times higher than in our part of the galaxy because of its far greater stellar density. Temperatures everywhere within a galaxy are made more uniform by continuous absorption and radiation of excess temperatures by fine-grained matter and presently unknown conduction processes with the Zero Point Field.

As to an older-universe cosmology, there would be much more time available for MBR temperatures to caramelize.

C. Prelude to the Pan Theory of Cosmology Directly Below

1) Comments, axis of evil APT

Mainstream theorists assert that Eddington's [10] estimates of the temperature of outer space, 3.1 K degrees, was just a lucky guess based upon his hypotheses and calculations. Outer space in his time only involved the temperature of the Milky Way since it was the only known galaxy. If so, what is the real temperature of outer space in our galaxy as measured today (the space between the stars containing mostly hydrogen)? Is it measured in a different way, a different frequency than the microwave background? A search for the answer to this question gives a temperature of 2.7 K degrees. But this is the temperature of the microwave background radiation, the supposed CMBR. Doesn't any part of this temperature include the temperature of outer space and the stars and galaxies within it as they shine down on Earth? Is the temperature of outer space simply zero?

If any part of this 2.7 K temperature is the temperature of outer space, wouldn't that explain the so-called Axis of Evil? So, if the temperature of space heated by all the stars and galaxies is not simply zero, then it should be a part of the CMB temperature. And if so then Occam's Razor would suggest that it's the only part of the microwave background temperature since that is the simplest explanation, one heat source element rather than two [30], [31].

If just the temperature of outer space, then why is its temperature so very uniform? This was a problem for Steady State theorists to explain in the 1960's and 70's. They turned to macro physics for their explanation. They said that a molecular form of iron and possibly carbon could absorb and reradiate these low temperatures easily and uniformly. And with an infinitely old universe that they proposed, there would be ample time for temperature uniformity. Opponents called this an ad hoc (iron whiskers) proposal, and that such a prevalent form and even distribution of such elements was highly unlikely.

Not discounting the explanation of MBR temperature uniformity relating to absorption and re-radiation by matter, there are other more modern microphysics explanations that could cause or assist in this temperature uniformity. The first is that all matter produces De Broglie waves. These waves relate to relative motion and oscillations of matter via their temperature, and also theoretically can involve particle spin. Via the outward radiation of these waves, a form of conduction exists with other matter since the field absorbs this energy; it is not lost. Secondly surrounding matter, virtual-particle oscillations proliferate to a greater extent than they do in the absence of matter. This can also be another form of energy production, absorption, and conduction of energy by the background Zero Point Field concerning the MBR generated from the surrounding matter. All could be forms of energy absorption and temperature conduction.

2) Steady-state cosmologies in general

The most well-known of the alternative cosmologies was the Steady state cosmology (SS) of Fred Hoyle, Gold, and Bondi, 1948, which had many followers until the late 1960's.

Comparing the SS model with the BB model, a primary difference between the two is that the SS model proposes the continuous creation of new matter in the universe. The reason for this requirement is that in an expanding universe model, the universe would have been progressively denser in the past. But this is not what SS astronomers believed they were seeing. In their view the past universe appears to have been less dense than the present, but because of the great distances that apparent difference was explainable.

The three primary reasons why the BB won the battle for cosmology dominance are as follows: First were the observations that quasars and some types of radio galaxies only exist at great distances, a few close by. This relates to an evolving universe proposed by the BB model. The second reason related relates to the observed abundance of light elements which can't be explained by nuclear fusion theory. The BB model proposed a theoretical physics mathematical explanation based upon an original BB event that assertedly created this abundance. The third reason was the 1964 discovery of the microwave background radiation that was assertedly predicted before its discovery. This discovery was also explainable by SS cosmology, but its almost complete uniformity was difficult to explain via SS cosmology.

All three reasons are explained in further detail within this paper. More recent observations indicate a

number of problems with both theories concerning the uniformity of the universe as explained in the above link. These involve violations of the cosmological principle, which include both violations of isotropy and homogeneity. Although these observations contradict both theories, most believe these observation anomalies put bigger pressure on the SS model because it asserts a non-evolving universe. Others argue that it puts more pressure on the ΛCDM model because it is the accepted mainstream model. This lack of universe uniformity is explained in the link above.

III. The Alternative: The Pan Theory of Cosmology (PTC)

The discussion of the Pan Theory of Cosmology starts with a brief explanation of the Pan Theory itself, which could be summarized as a different theory of modern physics. It is a 350+ page long online book that is found in [12]. Although the majority of this theory and its theoretical physics are cosmology related, a 70 page-long "Theory of Everything" was written based upon its tenets [26], and also a "Grand Unified Theory" [27].

The Pan Theory of Cosmology (PTC) is also a theory of Cosmogony (explaining the very beginning of the universe). Explanations of the very beginning of the universe have been deleted from Big Bang cosmology because of the singularity problem and the indeterminable means of its beginning – which now allows for many different possible beginnings. The PTC can also be classified as a "steady-state theory" because accordingly, the observable universe would not be evolving. This model proposes the Perfect Cosmological Principle which states that the universe is the same at all times, as well as in all places. When classified as a steady state theory, it is still quite different from Hoyle's Steady-State theory.

The PTC proposes a vastly older universe but one still finite in age, matter, and space. To explain redshifts, it proposes instead the slow diminution of matter [5] over billions of years rather than the expansion of space which can be viewed as the same thing relatively speaking. In this way, it also can be considered a simple "scale changing theory."

The PTC proposes the diminution of matter instead of the expansion of space to explain the observed redshifts. Like Hoyle's theory, it proposes the creation of new matter, but instead from the decrement resulting from the diminution of matter, created at the base and within AGN jets. The process of the creation of new matter has been conducted in labs and requires a great deal of energy. Besides the huge energy in galactic jets and AGN nuclei, the PTC also proposes that the ZPF is made up of physical field material that can be made into matter. The process is as follows:

To create electron positron pairs gamma rays are directed toward each other. At their intersection electron—positrons pairs are created.

As to the process of proton-antiproton creation:

"The process of electron–positron annihilation into proton–antiproton pairs are considered within the vicinity of ψ (3770) resonance. The interference between the pure electromagnetic intermediate state and the ψ (3770) state is evaluated. It is shown that this interference is destructive and the relative phase between these two contributions is large ($\phi 0 \approx 250^{o}$)" [23], [25].

A. The Pan Theory of Cosmology (PTC): Reflecting Back to the Potential Problems of Mainstream Cosmology

At this point in our discussion, we will go back to "the list of the more well-known problems of mainstream cosmology," 2.2 above, sometimes providing more detail and reasons for the above answers based upon the PTC. The list of problems begins with Dark Matter and Dark Energy. These are not considered problems of mainstream cosmology because both have been integrated into mainstream theory. The problem is that the essence of neither is known. Is Dark Matter a form of non-baryonic matter as presently believed, even though it has never been directly observed? And what is Dark Energy? Is it Einstein's cosmological constant Lambda, as many believe, or is it something else? The answers to these problems/ questions given above are based upon the PTC, explained in further detail below.

1) Dark matter

The answer given above was:

(…) the additional force influence within spiral galaxies and galaxy clusters that increase stellar velocities is instead a flowing vortex pushing force of the background field, the Zero Point Field, a presently unrecognized force and explanation. The equations result in "calculations that exactly match observations." Related observations are also given in [17].

Few know that Dark Matter is a very poor predictor of velocities in spiral galaxies. Only those who have studied it are familiar with the almost complete failings of dark matter predictions in this venue. But those who have studied it also know that modified-gravity models have their own problems trying to explain the velocities of galaxies in a cluster and gravitational lensing [2].

But for the PTC, we believe the related theory and equations that exactly match observations will be the

primary factor that could bring this theory into prominence once their unmatched accuracy is recognized. If the PTC would ever challenge mainstream cosmology in the minds of many, we believe the Background Field Flow theory and equations would be the primary reason [3].

2) Dark energy

The answer given above was: (…) (dark matter's) supposed existence is based upon the inaccuracy of the Hubble distance formula, which is assertedly wrong by at least 10% when calculating redshift distances at z ~ 0.6 when calculated by the alternative cosmology's equation [28].

After this information is known, very logical questions arise. What caused dark energy in the first place about 6 billion years ago? There is no known answer to this. What is more likely, the Hubble distance formula is simply wrong and under-calculates distances by at least 10% at a redshift of Z ~0.6 or concludes that the universe contains 70% more energy than that which is observable. One would think that the simpler answer is the better answer.

And now there's the Hubble Constant controversy, a most important part of the Hubble equation.

3) The Hubble Constant Controversy

As explained above, this problem is threefold. The most important part of the problem is that regardless of the Hubble constant used, the formula is assertedly wrong and miscalculates. The second problem is that different methods calculate different values for the Hubble Constant. The third problem is also a very serious one in that it implies that present interpretations of the microwave background radiation are wrong since they are based upon theory, and the results don't agree with direct measurements of the supposed expansion of space.

Not to reiterate what was explained above concerning the Hubble Constant Problem now called the Hubble Crises on page 4, we assert that the much bigger problem is that the entire Hubble distance formula, where this constant is a part of, is simply wrong and needs to be replaced. Another prime example of this is the observations of the James Webb Space telescope showing that fully formed mature looking galaxies appear to exist at the supposed beginning of the universe, only 300 million years old. Only 300 million years old and at the beginning of the universe is solely based upon calculations of the Hubble distance formula. The alternative distance formula of the PTC is called the Pan Theory distance formula. It has no age or distance limit to it as seen the link below. With this formula, there is no dark energy, no Hubble constant problem, and no seeming galactic age contradictions by the James Webb or any other telescope or array.

4) The fine tuning Problem

This is more a problem of particle physics than of Cosmology. This problem relates to what the mainstream believes are "free parameters" which are not free at all According to the Pan Theory (APT). They are all interdependent and depend upon presently unknown conditions of reality. Examples are the Gravitational force constant, the Electromagnetic force constant, the Strong nuclear force constant, and the Weak nuclear force constant. These forces are inter-related in the following way according to the Pan Theory's Grand Unified Theory and are not free parameters [27].

Other so-called free parameters are the speed of light which may be dependent on the density of the background field, the ratio of the masses of neutrons to protons, which are related to nuclear fusion and decay theory, etc. None of these or any other so-called free parameters are independent. The entire argument is based upon present-day ignorance of the facts and detail APT.

Instead of the free parameters of nature being fine-tuned for life, the opposite is true. Life originates and evolves based on the chemistry and conditions of the parameters that precede it.

5) Origin and future of the universe

How did the conditions arise that resulted in the creation and formation of the universe in the first place?

This is not a problem that requires an answer for the Pan Theory of Cosmology, or any other cosmology that does not assume that there were conditions of reality that preceded the universe. Accordingly, there was no creation event for the universe. The universe contains a dimension that perpetuates time, particle spin, and change which continues to this day. The Pan Theory describes this "dimension" as an unwinding, rewinding process that can be observed as particle spin [14].

6) Does the universe evolve and if so how, and what is its future?

According to the Pan Theory of Cosmology the universe does not evolve as a whole. Of course, there are local evolution cycles of galaxies and galaxy clusters, etc. If there is no evolution, then the future of the universe will just be a bigger one of continued density based upon the diminution of matter and new-matter creation primarily based upon creation events at the base of galactic black holes, and within their jets. Stephan Hawking proposed such creation events, but on a small scale, which is called Hawking radiation [36].

7) Cosmic Inflation

Is the theory of cosmic inflation in the very early universe, correct? The simple answer to this question is no, as also explained above. No steady state density model would have a need for such a proposal.

8) Horizon and Flatness problems

Neither the PTC nor any steady state density cosmology would have a horizon of flatness problem concerning the observable universe.

9) Size of the universe

The diameter of the observable universe, according to BB theory, is about 93 billion light-years in diameter, but what is the size of the whole universe? This is no problem for the PTC or any steady state model in that the universe would either be infinite or of an unknowable size, as would be the case for the PTC. Some would also assert that an unknowable size would also apply to the ΛCDM universe.

10) Baryon asymmetry

Why is there far more matter than antimatter in the observable universe? Could this be due to the asymmetry of longevity between matter and antimatter? As explained above, yes, this is the correct answer.

11) Cosmological principle

Is the universe homogeneous and isotropic at the largest scales? Yes, but the Friedmann–Lemaître–Robertson–Walker metric would not apply whether by the expansion of space as in the ΛCDM model, or by the PTC diminution of matter model where field flow forces dominate gravity.

12) Cosmological constant problem

Why does the zero-point energy of the vacuum not cause a large cosmological constant? What cancels it out? The possible outward pushing forces of the Zero Point Field due to internal energy, are canceled out by the inward pushing forces which we call gravity.

13) The dark flow

Are the galactic motions of this flow due to the gravitational pull from outside the observable universe responsible for some of the observed motion of large objects such as galactic clusters in the universe? The answer is no. This flow is instead due to the fractal nature of the universe and relates more to a prior expired era of the universe.

14) Shape of the universe

What is the "shape" of the universe? The universe is simply flat. There is no physical fourth dimension form or warped space to it. The universe is generally spherical in form with three dimensional boundaries. Space is simply the distance between matter and the volume that matter, and field occupy and nothing more. Space does not exist beyond the boundaries of matter and field by this definition.

15) Are the largest structures of the universe contrary to mainstream cosmology?

The Sloan Great Wall is 1.38 billion light-years in length, and the largest structure currently known, is the Hercules–Corona Borealis Great Wall. Are these actual structures, or just random density characteristics? Yes, and they all relate to forms of a somewhat fractal universe.

16) The cosmic density problem and the too-thin universe problem [7]?

Why does the universe appear to be too thin in the past? The ΛCDM universe requires a much denser past to verify the expansion of space. Numerous studies have asserted that the universe of the past was not dense enough to confirm the expansion of space, to have created all the observed galaxies, galaxy clusters, or the observed cosmic web. This problem is called the cosmic tension [8].

For the PTC, background field flow would be a much faster agent for the creation of the observed structures than gravity.

17) The predicted abundance of light elements

This theoretical physics was based upon the known abundance of the light elements at that time. Its predictions were hypothesized based upon a single Big Bang event which is no longer part of the theory. For this reason, any further use of this theory would be a further revelation of its ad hoc nature enabling any competing theory to possibly come to equal or better predictions by their own ad hoc proposal. For the PTC, the entities of this creation would be galactic black holes and their Jets [22].

18) The axis of evil

Some large features of the microwave background are supposedly coming from events believed to have happened over 13 billion years ago, but they appear to be aligned with both the motion and orientation of the solar system. What is the reason for this? The biggest problem of this proposal is that it must be assumed that no part of the observed MBR, 2.7K degrees, is the temperature of our galaxy. If not, where can we find the temperature of the atomic and fine-grained matter of our galaxy? If our galaxy's temperature is a part

of this MBR temperature, then why not the whole of it which would explain the so-called axis of evil.

B. The Beginning Universe according to the Pan Theory APT

The universe began as a beginning entity similar to the original Big Bang theory explanation. But unlike the BB entity, this entity would have been very simple in form and character, and its changing would have been extremely slow over countless billions of years. For the Pan Theory, this beginning entity is called a "pan," (pan, meaning everything in Greek), and also the only most fundamental particle that exists, concerning the PTC. It only changed/changed in form very slowly. So, the time span concerning the beginning of the universe was generally incalculable concerning the entire universe APT. The minimum time period calculated to create the observable universe via the Pan Theory was more than a trillion years rather than billions of years, and then only came to the time period where the first stars and galaxies began to form. Accordingly, humanity would not only be lost in space but also lost in time – concerning our relative position in each.

C. Characteristics of the Pan Theory of Cosmology (PTC)

1) A Diminution of matter theory (matter getting smaller over very long time periods)

The PTC can be considered a steady state theory and is also a diminution of matter theory. The first published diminution of matter scientific theory was proposed by Robert Dicke [17]. His diminution of matter model was based upon gravity as its cause. The idea of these theories collectively is that if matter were slowly getting smaller over time, then it would appear to us that the universe was expanding. We would see exactly the same redshifts of galaxies. As simply a condition of relativity, space getting larger relative to matter, or matter getting smaller relative to space would be exactly the same thing. But if the condition were not just relative but real somehow, then there could be a difference between the theories of theoretical physics and mathematics involved – which would be the case for the PTC.

In addition to his Steady State theory, Fred Hoyle along with Jayant Narlikar, proposed a matter diminution model in the 1960's (electrons getting closer to atomic nuclei) to explain the observed redshifts of galaxies rather than the expansion of the universe or of space. A few lesser-known diminution of matter theories have also been proposed over the decades since the 1960's. Some are called scale changing theories, and others are called Scale Relativity theories [12]. Nearly all of these have a dominant mathematical basis. The Pan Theory of Cosmology proposes just a simple diminution rate over time, which mathematically would be like the Hubble constant.

For the Pan Theory, the diminution of matter process is based upon an unwinding-rewinding process of matter, as observed in the spin of fermions. APT: The rate of change whereby matter would be getting smaller is about 1,000th part every 6-7 million years. Also, new matter would be steadily created (electrons, protons, and their anti-particles) from the matter decrement to the Zero Point Field. From this higher field density this new matter would be created, maintaining a generally constant density of matter and a steady-state condition of the universe, conserving both matter and energy. The Pan Theory hypothesis explains the process of new matter creation mostly involving very active galactic nuclei having polar jets, where new matter would be created from the foundation materials in the Zero Point Field (ZPF), the simplest elements of which are called a pan in the PTC.

The PTC also proposes the presently unknown background field flow of the ZPF as being a greater influence than gravity concerning the large-scale formation and structures of the universe. A prime example of this unknown force is presently called the "dark flow," but APT, field flow is happening everywhere at all times at the largest scales of the universe. Although observed by a number of astronomers and discussed as an unknown effect in galaxy clusters, it is primarily attributed to non-baryonic dark matter or unknown galaxy cluster processes. It remains an unknown observation anomaly to astronomers and theorists and probably will remain so for a while since the time required for studying an entire galaxy cluster is extensive to enable any conclusion at all, right or wrong [17], and the cluster's related analyses.

The (PTC): This cosmology also proposes a model of pushing gravity that does not contradict the equations of General Relativity but adds its own field-flow addendum equations to gravity to calculate the additional velocities of stars in spiral galaxies, which are now attributed to the existence of Dark matter. It should be realized that gravity does not increase escape velocities; it just applies forces against them. It also has its own equations to calculate galactic distances, ages, brightness, etc. At the greatest observable distances these calculations yield distances and brightness many times greater than mainstream cosmology, more in line with JWST observations since there is no distance limit [18].

2) The Pan Theory of Cosmology continued: the non-expanding universe

The Pan Theory proposes that galactic redshifts are caused by a diminution of matter process rather than the expansion of space. Space would appear to be expanding from our perspective but instead matter would be very slowly getting smaller, a type of scale-changing or scale-relativity theory [13].

With larger matter and measuring sticks in the past, we would also measure the distances of space as

having been greater in the past, compared to the present. If distances would measure greater, then the rate which time passed would have to have been slower (time dilation) for the speed of light to remain the same in the past as it is now – via distances traveled per second.

3) The universe would be far older, but not infinite in time past or size

APT, the universe had a beginning. Therefore, the Pan Theory is a type of non-infinite steady state theory proposing a totally flat universe. Via the Zero Point Field, it is also an aether proposal like Einstein's little-known proposal which he called "Aetheory," and Paul Dirac's proposal that the quanta vacuum (ZPF) could be the modern-physics equivalent of the particulate aether proposals of the 19th century [37], [38].

Observations should reveal that the most distant galaxies were (and also looked) the same in the past as in the present local universe; a steady-state model – which is now what we believe is being observed now by the James Webb Space Telescope.

4) Characteristics that distinguish the Pan Theory of Cosmology from other steady state theories

The most obvious differences between the Pan Theory and other steady state (SS) theories are that the universe is not infinite, space is not expanding, and its distance and brightness equations yield different results than other SS theories. It explains both the reasons and equations necessary to contradict the existence of both dark matter and dark energy. Unlike alternative-gravity models that require additional unseen matter to explain the velocities of galaxies in a cluster, the Pan Theory requires no additional matter, only the background field flow of the Zero Point Field, which is not difficult to understand, even though its theory is not generally known by mainstream astronomers and cosmologists. This field flow is known by astronomers and theorists to follow matter, or the cosmological principle would no longer apply. But the PTC also proposed that it instead leads matter toward a center of gravity like gravity does. But instead of moving at the speed of light like gravity, it moves at the speed of stars in a galaxy, and at the speed of galaxies in a cluster. This field has variations in density and field flow. The farther away from matter the higher the density of the field and the slower the field flow. The process is explained in detail in [26].

Above, we discussed that the BB model proposes the evolution of the universe over time. The universe therefore should have looked different in the past according to BB theory. Examples that we discussed were AGN radio galaxies and quasars. The range of these galaxies distances vs. their redshifts will be discussed later in this section.

D. Observations Interpreted by Mainstream Astronomers and Theorists that Would Be Difficult for the Pan Theory of Cosmology to Explain (like the Big Bang Problems Listed Above, but a Much Shorter List)

1) Quasars and AGN Radio galaxies explained by the Pan Theory of Cosmology

It wasn't realized until the late 1970's that quasars and some radio galaxies are focused jets of light and matter, created by Active Galactic Nuclei (AGN) at Galactic Super-Massive-Black-Hole (SMBH) centers of large galaxies. Before then they were thought to be unique unexplained entities. Upon better understandings, they were then used to defend the evolving universe of the BB model.

Roughly speaking, most quasars are also radio galaxies, with galactic jets that are focused on our direction, while radio galaxies that have jets are not focused on us. Both are presently believed to stem from polar jets of active galactic nuclei, AGN. The graph discussed below shows the highest frequency of quasars at a redshift of about z = 2. Radio galaxies of this same type are of a much greater frequency but not focused on our direction. Quasars were first discovered as radio galaxies before their visible spectra were later discovered. Some radio galaxies at an observable angle reveal the full view of their opposite polar jets, perpendicular to the axis of rotation of the SMBH that generates them.

The nearest quasar to date has a redshift of 0.056, and the farthest observable quasar, at a redshift, was (2017) z = 7.64, and now a contender at a redshift greater than 10 is believed to exist. Quasars with redshifts greater than 6 would likely contradict BB cosmology at such an asserted early era of the universe (as will be explained).

Like the famous astronomer Halton Arp and others having the same ideas originally proposed and the PTC also proposes that the distances to some or many quasars cannot be accurately determined by their redshifts alone since the redshifts of at least some of them would have an intrinsic character to them causing their distances to be incorrectly over-estimated. If so, then at least some quasars would be much closer than what their redshifted spectra would indicate. And if so, what could these intrinsic characteristics be based upon the PTC?

The possible answers are not necessarily part of PTC so they could be considered preferred hypotheses regarding possible alternative distance determinations to these AGN quasar galaxies since we believe in time these hypotheses will gain or lose support via new evidence.

Why are these proposals discussed here at all? Because the PTC and all other steady state theories would have to explain that the universe was the same in the past, but the distances attributed to quasars and radio galaxies, based upon their redshifts, contradict an evenly distrusted universe, so such explanations are needed like those of the astronomer Halton Arp, who attributed some quasar and galactic redshifts to

intrinsic redshifting.

a) The first proposed hypothesis

The first proposed hypothesis is the well-known effect called gravitational redshifting [18]. The center of our sun, for instance, is slightly more redshifted than the rest of the sun's spectra. The force of gravity slightly stretches the sun's spectra of EM radiation at its gravitational center of our line of sight [20].

For a supermassive galactic black hole centers this huge gravity well might greatly stretch polar jets moving outward from this supermassive black hole resulting in an intrinsic-like redshift unrelated to the quasars distance from us. Mainstream gravity theory, GR, concludes that such a great redshifting effect on light from its source cannot be very significant. But this conclusion of GR seems only hypothetical since it would be very difficult for this effect to be directly tested. But possibly a much greater gravitational effect of light could be a perpendicular gravitational force changing its relative position concerning its light source, that stretches an existing light wave out via gravity. When stretching results in a bigger picture, we call it gravitational lensing, but if the stretching results in a strictly linear effect of a longer light wave, then the results might be observed as an increased redshift along with a stretching of the image along our line of sight.

b) The second hypothesis

The second hypothesis relates to velocities of polar jets of supermassive galactic black holes. Starting from the 1970's, the velocities of some supermassive black-hole jets have been measured. Measurements indicated that faster-than-light speeds were occurring concerning observed materials in these jets. After more than a decade, some were claiming observing speeds a little faster, up to five times faster than the speed of light. The theory asserts that the speed of light is constant and that nothing can move faster than light. Critics showed how they believed an optical illusion could be occurring, but a few observing astronomers answered these "optical illusion" contentions with very detailed observation details that they believed could not be contradicted by optical illusion assertions. After consideration, in time nearly all believed that the optical-illusion answer was correct. Even today, some astronomers still assert that some galactic jets (the observable matter within them) can be measured as moving at faster than light speeds relative to the center of the galaxy, while mainstream theorists still claim they are optical illusions [39].

c) The third hypothesis

Halton Arp and others also proposed that not only quasars but some distant galaxies also had redshifts that calculate their distances greater than what they really are, as proposed by Halton Arp in his book "Seeing Red" [19].

Our proposal is that the redshifting of these entities could relate to the changing path of their light through the zero-point-field which could produce a variable redshift for some galaxies. For example, as galaxies orbit in a somewhat compact cluster their relative position to other galaxies in the cluster would change every few million years. One way this happens is we observe galactic lensing via gravity. Millions of light-years of exiting light emissions get stretched out by gravity. But in our proposal, these light waves get even more stretched out by field flow because it occurs at a much slower velocity than the speed of light, at the velocity of galaxies in a cluster. Therefore, there would be a much longer time for their stretching. Our related research and study are seen in [18].

2) Another hypothesis for explaining increased redshifts of quasars and galaxies other than increased distances

This possibility is more of a relative motion and fractal universe cosmology proposal.

The web and void structure of the observable universe astronomers have given the name Cosmic Web.

It consists of massive filaments of galaxies separated by giant voids. So why does our universe have these peculiar, web-like structures?

We believe these structures relate to a fractal type universe where we see redshifts quantized with higher frequencies at certain values, and at much greater distances we might be seeing just the sides of great web structures such as the Great Wall, or the super-cluster of galaxies called the Hercules-Corona Borealis Great Wall, The Sloan Great Wall, etc. There are many dozens of such known structures [40], [41].

Imagine these circular and sometimes spherical webs of galaxies that internally have great voids providing the web-like structures we observe [42].

Other volumes of space at central points of an apparent web may not appear as voids necessarily but as volumes of much less galactic density. These volumes we might call galactic web bubbles. As to a much older universe cosmology like the PTC, and a number of fractal universe models of a much older universe many dozens of billions of years in age, these bubble structures would accordingly be expanding outwardly from their centers which once included large galaxies and galaxy clusters that have burned out and no longer held together by gravity or inward field flow, the remnant matter of which are now drifting outwardly from each other and their mutual center of origin. This outward flow can also be called the background field flow of the zero-point-field. As these bubbles expand into each other, the web density of their

interactions would create even denser web structures of galaxies and galaxy clusters.

According to the related theory, when looking at such bubble web structures from our perspective, the web foreground would be the part of the web moving toward us, and the background part of the expanding bubble would be moving away from us. Besides the distances from front to back of the bubble, there would also be the added relative motion in both directions. The implication could be quantized redshifts along a single line of sight.

3) The Pan Theory proposal of background field flow

The accuracy of this proposal is far better than dark matter predictions of spiral galaxy velocities compared to observed velocities. According to the Pan Theory the speed of light is not relative to the center of gravity as in GR, but by the motion of the background field in which the light is traveling. It would be possible then that light within galactic polar jets could have faster than light speeds relative to the galactic center since more than an equal part of the background field itself could be accompanying the matter within the jet. If so, then the light itself could travel within the jet at an additional speed-of-light faster than the field and matter within it.

a) Quasars and background field flow

For example, if the speed of the background field and some matter within a quasar jet were eventually able to move at the speed of light, the light propagation within the jet could be moving outward at the speed of light relative to the field within the jet. This could be twice the speed of light relative to the galactic center.

As to faster than light quasar jets [23], if a faster-than-light jet moves far beyond the gravitational influence of the galaxy and is focused directly toward us (the quasar), its medium would fall out into the local ZPF and its light waves would continue toward us, redshifted (stretched out) much more than its redshifted distance would otherwise indicate because its waves were stretched in the jet.

Now let's look at a quasar chart below comparing their quantities with their redshifts. In the chart below, the quantity of quasars is indicated on the scale on the left, and below are their redshifted quantities.

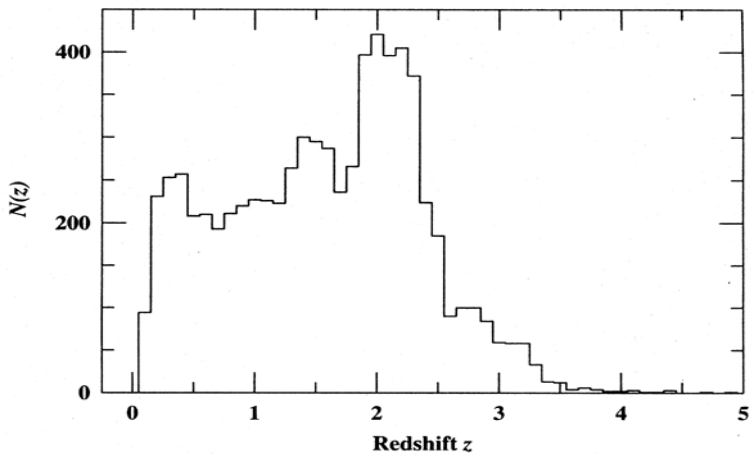

Fig. 1. The quantitative distribution of quasars at redshift distances.
This predicts periodic redshift peaks at z z = 0.061, 0.30, 0.60, 0.96, 1.50, and 2.1.
Source: [35]

As we can see on this chart, the largest quantity of quasars is observed at great distances from us centered around the redshift of about 2. This was the basis for the original BB claim that quasars can only be observed in the distant universe and past; none can be seen close by. Since then, we have seen some quasars much closer. But still, the question arises, why do so many quasars congregate at a redshift distance of about 2?

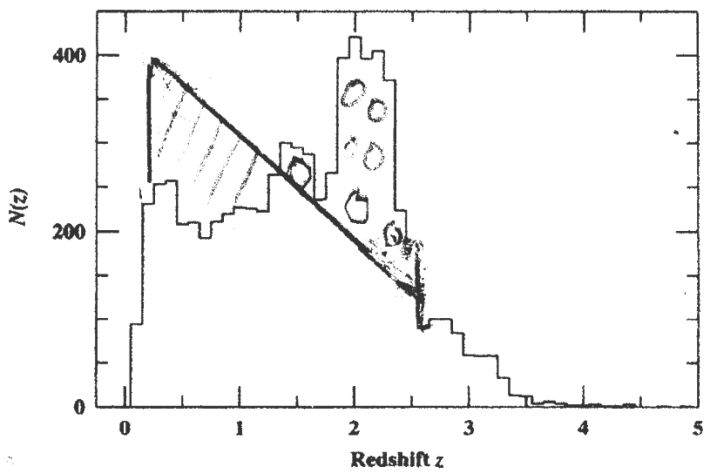

Fig. 2. The redistribution of quasar frequencies based upon about 20% non-distance related redshifts.

Applying the principles explained above concerning intrinsic redshifting, about 1/3rd of the area of the above chart from a redshift of about 0.05 to 1.25 that hypothetically existed, shown by diagonals, has been redshifted up to a redshift of about z = 2.25, a redshift from 0 to about 1. This is the chart area where these quasars were shifted to, shown in circles. Therefore, the diagonal areas should be equal to the area shown with circles within it. This would be a triangular chart starting from close to z = 05 with a height of about 400, progressively decreasing to a redshift of z =3.75 and a quantity of no more than a dozen quasars – with very few observable quasars beyond that redshift.

This would be a hypothetical quasar distribution chart based upon excessive redshifting due to faster-than-light-speed jets, [20] and light traveling at light speed within the jet medium at close to twice the light speed relative to the galactic center. It also includes the possibility that quasars that are closer to us are less likely to be focused exactly on our direction so that we would receive the entire jet focus, therefore less likely to meet the definition of a quasar, brightness vs. distance, with a focal-point (stellar) like appearance.

It is also based upon a quasar redshift increase of more than zero up to z = 1, the quasar's real distance redshift plus an addendum redshift up to 1. However, it should be realized that redshift changes are very sensitive to distance. A redshift addendum of only 0.3 could calculate it to be more than 3 billion light years farther away than it really is; so, a very small change in redshifts less than z < 1 can result in a very big over-calculated distance error. Similar problems of distance determination could result from AGN radio galaxies trying to determine their distances. If their jets were focused in our direction some of these AGN radio galaxies would be classified as quasars [26].

It might be interesting to realize that the two hypotheses above could also be applied to the BB model, Hoyle's SS model, and any other model, as well as to the PTC.

PTC: Quasars may have an unfortunate technical definition [21] as far as their general understanding is concerned, distance vs. brightness requirement. The closer a quasar, the less likely its jet might be angled exactly in our direction for us to receive all of its jet's light, and the less likely its definition involving brightness versus distance might be met, cutting down the possibility of close-by quasars via their definition alone. For this reason, and for one or more of the explanations above, a number of closer quasar-like galaxies may be counted as AGN radio galaxies instead. Quasars defined in [23].

Now we can look at the graphs above concerning the frequency of quasars relative to their redshifts and calculated distances. We see that the greatest frequency of quasars is at a redshift of about 2. Considering the possibilities of the two hypotheses above and the knowledge that quasars come in different sizes and intensities; some quasars could be brighter, and others more intrinsically redshifted than others. It appears that the primary range of such intrinsic redshifting would be from zero, to roughly 1.0 (their z value addendum). This could put the plurality of redshifts plus their intrinsic values at a "z" value of about 2, and tail off like an almost expected linear distribution like our frequency graph above.

Of course, either one, or less likely both of the two hypotheses above (or even another cause) could result in intrinsic redshifting of quasars, the possibility of which was first made well-known by the famous astronomer Halton Arp, as discussed in some detail above.

4) Polar Jets of stars and stellar size entities that accordingly could create new matter based upon the PTC

Also, some stellar black holes and neutron stars can be seen to have powerful polar jets at the stellar scale. These jets can also be seen in a few proto-stars with planetary nebula, binary stars, T Taura stars, gamma ray bursters, and cataclysmic variable stars. Polar Jets from AGN galaxies [8].

E. The James Webb Space Telescope Observations Contradicting BB Cosmology, 2023 and Beyond

It should be considered that the first James Webb observations at the greatest distances look more like a steady-state universe of some kind, and the furthest galaxies seem to contradict BB cosmology and its predictions concerning how the beginning universe should look [13]. Putting a James Webb background picture alongside a Hubble Deep Field photo, they appear to be almost exactly the same. And both pictures look similar to close-by photos taken inside galaxy clusters, where different apparent ages of galaxies can also be observed [34].

Since these James Webb discoveries are so new, it will require time for them to be vetted by the peer-review process, and an unapproved pipeline of articles under peer review is growing as the telescope continues to make observations from its first year of planned science. The continuing pipeline of articles will feed into science journals for their consideration and the merit of these published peer reviewed articles as Future James Webb news will be considered as they submit their peer-reviewed and published findings to the STScI news office for consideration of their promotion.

The PTC correctly predicted what the James Webb has already observed, and we believe what it will observe in the future concerning the distant universe [13]. What has been observed in the most distant observable universe seems to be totally contrary to BB cosmology, in our opinion, and we believe in the opinion of many others, with many more anomalies to come, – until the LCDM model and the Big Bang theory as a whole will be replaced in accord with our prediction.

F. A Few Answers related to, but Generally Outside the Purview of Cosmology

APT: How could matter be getting smaller? The answer to this hypothesis is: that all matter goes through an unwinding and rewinding [14] process which we observe as the particle spin of fermions (spinning atomic particles). This spin is real according to the Pan Theory but is now called the material characteristic of angular momentum instead. What is time? Time is simply defined as an interval of change, the rate of change measured by a clock, no more than this. Why does the rate of time change for accelerating particles and particles under the influence of gravity? These particles are either accelerating against the background field of motion (the ZPF) or moving against this accelerating field concerning gravity. They are the same relatively speaking and the resistance of the acceleration changes the rate a particle unwinds and rewinds and our measurement of time vis-a-vis clocks. The reason for angular momentum, on the other hand, has no acknowledged explanation in particle physics.

APT: What is space? Space is the distance between matter and the volume that encompasses both matter and field (the ZPF). If the universe is not infinite, then where did it come from and what's beyond it? There was no time or space before the first change of the beginning entity, which is called a pan in the Pan Theory. The first changes within it defined the meanings of both time and space. Based upon the definition of space directly above, space has no meaning or existence beyond the confines of matter and field. For this, the word "nothing" would have no existence in reality. What is gravity? Gravity would be the pushing force of the background field upon matter. It not only creates the condition of matter by definition but pushes it together like a surrounding atmosphere. What is a field? Although a field can be described in many ways including mathematically, it can be something physical APT that through its action can create energy.

IV. Conclusions

We have concluded that the Lambda Cold Dark Matter model is wrong which would include nearly all of its foundation pillars, dark matter, dark energy, and probably both the expansion of space and an evolving universe. Instead, the most distant universe observations are pointing to a universe very similar or the same as the local universe. If so, almost any steady-state theory could have made better predictions concerning the most distant universe than the ΛCDM does. Although Einstein and many others have proposed a steady state universe [22] over many years, very few of these theories are remembered today.

The general conclusion and prediction of this analysis is that the ΛCDM will eventually be replaced by a much-less contradicted cosmology within the remaining decade, if not sooner. In the meantime, it might be expected that one or more theorists might propose changes to mainstream cosmology that would allow for a much older universe, the limiting ingredient primarily being the Hubble distance formula.

A. Conclusion: For Those Looking to Find a Better Cosmology

To consider a new cosmology, look at the latest from James Webb. It presently seems that new discoveries will be coming from this infrared telescope on an ongoing basis, but also look for other new scopes and array observation discoveries. Whatever theory changes are being considered; be sure they are consistent with James Webb observations. If one is considering an evolving universe model, find a good rationale as to why the James Webb and other galactic photos of all eras of the universe seem to look the same, unless one believes otherwise.

For SS models, calculated distances would be more proportional to redshifts with no distance limit to it.

We believe that any alternative cosmology that is consistent with JWST observations will be a steady-state-like model of some kind since the JWST most distant observations seem to look the same as Hubble Deep Field photos, and the same as photos looking within local galaxy clusters.

There are many alternative cosmologies to choose from which have already been proposed, plus almost countless lesser-known possibilities that might be consistent with the JWST photos. We believe almost any cosmology that proposes a much older universe and does not use the Hubble distance formula might work. A few of these proposed alternatives can be seen in the two links below, but there have been almost countless other proposed possibilities, most of which are little known [32], [33].

For The Pan Theory of Cosmology to be considered for the cosmology replacement process, its explanations and equations that make almost perfect predictions should become more well-known, eliminating the need for Dark Matter. The approach we will follow will be to educate as many astronomers that are interested, as to the far-greater accuracy of the Zero-Point-Field flow model over the great inaccuracies of the dark matter proposal in predicting stellar velocities in spiral galaxies, and also explain the better predictions within galaxy clusters. Secondly, we plan to discuss our distance and brightness equations and how they fit type 1a supernovae far better than the Hubble distance formula, eliminating the need for hypothesized Dark Energy.

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