

Helical CMBR Asymmetry, Pre-Big Bang State, Dark Matter and the Axis of Evil, *The Architecture of the Universes*

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Canterbury Kent UK. 10th February 2011 v1 12th Feb. v2 30th April.

PACS; 98.62.Ai 98.80.Qc 94.30.Cv 98.54.Aj 98.58.Fd

Abstract

We describe a solution to Cosmic Microwave background Radiation (CMBR) quadrupolar asymmetry and anisotropy, predicted by the discrete field model (DFM) described in earlier papers, and explain how it could have taken it's spiral, or, we predict; 'helical' form. Also explaining the so called 'axis of evil', and the big bang, (or more appropriately big 'whoosh'), and implied pre big bang conditions. We provide logical and photographic evidence. Apparent 'magic bullet' properties of the DFM and are found as part of a falsification exercise which has recently also provided a new galactic secular evolutionary sequence. We explore how the model unites Relativity with a Quantum mechanism, using the postulates of Special Relativity (SR) but applies conceptual refinement to one assumption for a better fit to observation and improved understanding, giving it a basis precisely equivalent to General relativity (GR) and better defining Quantum mechanics. We find a 3rd way, with fields but no absolute frame, with no new physics or maths but using a different way of thinking, as anticipated necessary by Einstein and Bragg. This is an interim report pending consideration of further fuller papers, which will be followed up here.

1. Introduction

We have presented a detailed theory that galaxies are recycled by Quasars via toroid super massive black holes (smbh's) at approximately 9 Billion year intervals, due for imminent publication. We outline parts here.

The final transition is from Lenticular to Ring galaxy as the smbh sucks in, ionises and re-polarises the galactic matter and ejects it in contraflow plasma jets at over 8c' apparent speed in the inertial frame of the black hole, in collimated or 'incentric' (graduated velocity) streams.

Due to the basic symmetry of a torus 'Tokamak' (which has intrinsic rotation) the gas jets cannot be symmetrical, giving directional, quantum and polar uncertainty. Re-ionisation (without an 'epoch'), and Chiral polarisation are also thus explained. The jet may thus 'range' around the axis, creating a spiral pattern. Evidence of the spiral configuration is common from solar mass black holes upwards. (see 3C273 5S 433 etc.). Figure 1, shows Centaurus A, from the European Southern Observatory, (ESO) and was considered to be of a spiral galaxy being 'eaten' by another, but the model shows it as a single galaxy being recycled and re-born. Once the galaxy has been consumed smbh is expended, but, still at the the centre of mass it then re forms and starts rotation on the new axis perpendicular to the jets, which restarts the evolutionary cycle. Fig. 1. shows the extent of the plasmasphere which remains around the region. As this has a refraction co-efficient light passes through it at c/n with respect to (wrt) the black hole. The plasmasphere, perhaps up to many thousand light years in diameter, moves, and can rotate, with the black hole at it's core.

Fig.1 NGC 5128

Centaurus A.
(ESO. APEX)
The sub. mm.
Radio source
comes from the
receding gas jet.
Note the plasma
cloud / halo.
Electromagnetic
waves diffract
and move through
it at 'c' in the local
inertial field.



The last vestiges of the jet hang in space. As the plasmasphere starts rotating the inner jet 'arms' rotate with it. These form the bar of a new open spiral galaxy, which slowly tighten with rotation. The dense ionised particle plasma halo is the dark matter that binds the galaxy together gravitationally, forming it's local 'inertial field' of CMBR rest frame. The discrete field model (DFM) uses co-ordinates 'attached to a body' as Einstein specified (though non rigid) creating a volume, with boundaries, rather than the simple Cartesian unreal abstractions of lines and points adopted for mathematics. This rejoins Locality and Reality with a quantum mechanism, the gravitational plasma's refractive diffraction slowing and bending the em waves by atomic scattering to give curved space-time, equivalent to the Maxwell/Einstein weak field approximation. We must remember our observed reality is always unique and subjective, and would vary in another position and inertial frame. What we observe is therefore always apparent and mathematical re-tracing and analysis will always be required to find the real and non-observable original 'emitted' signal. Measurement is only real *within* each inertial frame.

Plasma particles also condense from the vacuum at a flux increasing with motion with respect to the CMBR rest frame. This 3rd frame would otherwise be conceptually inconsistent with our interpretation of SR as it is the much feared preferred background 'ether' frame. This is however now not a problem as it only ever represents the Local frame '*last scattered to*' which is a concept well established in current astrophysics: www.apctp.org/topical/stringws2007/Tarun%20Souradeep1.ppt. As this is a discrete local frame, and not absolute, it avoids violation of Bells inequality.

The following section is abridged from a paper currently under review describing the process in more detail;

2. Effects of Refraction & Diffraction

The QED analogy of the DFM is absorbed photons re-emitted at 'c' in the rest frame of the co-moving electron. This has an effect well known in optics [1] where the time averaged Poynting vector can be reversed, but this is *mistakenly little recognised and applied* in general physics due to the extra variable. The velocity change is **twofold**; first due to the index 'n' of the medium, giving c/n, and second due to the relative 'v' (inertial frame) between media in relative motion. Only the acceleration energy requires remains as described by the Lorentz/ Fresnel exponential transformation function. (LT). We give an example; Consider a plasma bubble or cloud expanding in a vacuum. FIG. 2 shows the Magellanic cloud white dwarf supernova bubble, 23 light years dia. expanding at 18m km/hr. Let the plasma layer be 1,000km thick with n = 1.1. To an observer O at rest with the centre point of the sphere a light pulse entering the membrane would appear to slow by 18m.km/hr.(v_p) plus the c/n of the local plasma. Light reaching O is only the EM waves emitted by each one of a progression of particles, the scattered signal from each one travelling at 'c', but the sequence will give an apparent c¹ = c/n + v_p. This is entirely allowable without breaching either SR postulate as it is moving in a different frame/field and nothing breaches the limit 'c' in reality. Observing from a different inertial frame allows apparent. c + v.



FIG. 2. The expanding Plasma Bubble in the Large Magellanic Cloud; NASA, ESA, Hughes.

Light paths are refracted by the mass of the plasma in the normal way via the Polarisation Mode Dispersion (PMD) scattering delay, [2] both quantitatively and qualitatively equivalent [3] to time delay (dilation) and lensing via gravitational and inertial mass equivalence, providing the real space-time curvature mechanism. This provides

simple consistent relationships between Optics, Relativity and QM, but it is more troublesome to first conceive than it may appear. Free of PC Einstein said we "*should be able to explain physics to a barmaid.*" The solution meets Occam's razor as it represents the fixed time 't' for light to pass through a glass of beer, - set by the c/n of glass and beer. C/n is invariant with the speed of the glass or the light source. When slid along the bar at any velocity 'v', an observer at rest on a bar stool watching a light pulse passing through the beer would actually be observing the sequence of emissions from individual particles, scattered at 'c' (or c/n) wrt the particle, moving, and received, at the local c/n of the media it passes through, i.e. air, and the lens fine structure then the lens medium of any observer or instrument. The apparent time t² the pulse takes to pass from the observer frame depends on the 'v' of the glass. But an observer sliding with the glass would time the pulse passage across his frame differently, proving that specification of observer frame is essential as any number of different frames are possible, all giving different apparent velocities!

A block of ice, or a cloud of plasma are equivalent to the beer glass, with n = above 1 and representing different inertial frames or fields. The co-ordinates are "*attached to a 'body'*", as specified, giving no issue of abstraction from reality. The DFM [4] suggests simple relationships which are fundamental in understanding the process [5] [6] and avoiding anomalies, but which require the brain to hold and consistently apply that one variable more than we are used to handling. An analogy is a computers inability to predict the motion due to gravity of three bodies. The speed of light scattered within any medium to any observer at rest with it is c/n, which bears no relation to the apparent progress of the original signal through that medium wrt any other relatively moving observer, so although the light is received at 'c' in all frames, the apparent rate from each of infinitely many frames varies. This both proves SR and allows light scattered in local CMBR vacuum rest frames. Einstein identified the difference in field basis of SR and GR in 1924 saying;

"..the aether of general relativity differs from those of classical mechanics and special relativity in that it is not 'absolute' but determined, in its locally variable characteristics, by ponderable matter.

The DFM removes this potential inconsistency and all paradox arising from SR. Applying our conceptual ability is the only problem. Our brain may be better able than a computer to adapt to an extra variable but it may first require abandoning some pre-conditioned assumptions or beliefs to unveil the simpler solution.

This dynamic plasmaspheric 'inertial field' model has simple axioms;

1. The SR postulates, and Principle of Equivalence,
2. Fresnel's 'n' as a refractive medium constant.
3. Doppler shift at change of relative velocity.
4. *That the fine structure of massive bodies increases with motion as a plasma observed as 'photoelectron'*

clouds, halo's and shocks, acting as inertial frame boundaries via refraction and with inertial mass. [7] These give lensing consistent with Λ CDM Nbody simulations. [8] Lenses have opacity $n = 1.38$ (eye) and $n = 1.5$ (glass), plus a boundary fine structure with non zero 'n'. They may also move at v . All mediums change the speed of light to 'c' locally as it is invariant *within* frames. **All moving observers will therefore find it at 'c' or c/n.** So the apparent rate of change of position of something in another inertial field *does not matter!* Or require the LT. Frequency *or* wavelength also change (subject to observer frame), which is equivalent to dilation (red shift) and contraction (blue shift). [1] This further predicts that rotational direction will slightly influence frequencies in double lenses. When applied consistently to secular evolution of galaxies the simple solution emerges with a perfect fit to broad observational evidence, based on a rotating inertial field and consistent with Einstein's view, extended beyond GR, that massive bodies are not *in* space but "*spatially extended*," and that there is not one but "*infinitely many spaces*" in relative motion. ('notes to 15th edition 1952, - after Minkowski 1909). With all but ideal plane waves having non zero interaction with vacuum 'dark energy' cosmological red shift may now not be entirely attributed to expansion.

Figure 3 shows a number of quasars, some with and some apparently without the spirally ranging jets as Fig. 1. These may be detected as regular pulsar signals when Earth is within the trajectory cone. The model suggests the HH34 jet (bottom) is on the wane, but that the profile of the event horizon of the toroid black hole can be seen highlighted by gravitational lensing, via diffraction through the boundary plasma.

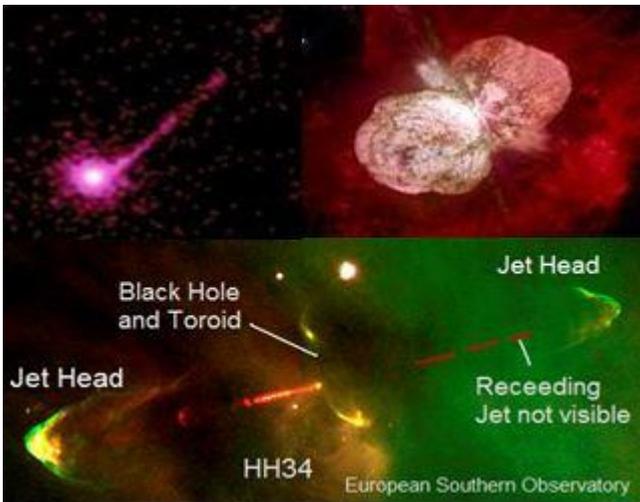


FIG. 3.a) (Top L; Nasa) M87. Apparent superluminal blazar gas jet 7c in Hubble's frame. 1M L.yrs. **FIG. 3.b)** (Top R) Carinae, with 'ranging' or dispersed gas jets. **FIG. 3.c)** (Bottom) HH34. ESO The receding jet is red shifted beyond the visible range but does lensed light pick out the toroid black hole profile?

A first approximation of galaxy recycling time scale, suggests that the Milky Way has already been recycled once, and it will be due again shortly after the sun expires in 5-6Bn years. Finite galactic life span is approximated at 8-12Bn years. The DFM appears to have exceptional

predictive power and ability to resolve anomalies, and is equivalent to the Stokes/Planck model, the only one consistent with Michelson's nul result. Examples are the Pioneer, Voyager and Flyby anomalies. Additional plasma mass and acceleration along with a change in the CMBR rest frame through the heliosphere's bow shock render them all consistent with nature. The model also predicted the excessive lensing delays of over 3 years now being found, giving anomalously high galactic mass estimates. Spectroscopy of lensed light may be more of a gold mine of information than we have realised. Gravity wells and macro caustics are shown to be unnecessary 'patches' to the old theories as light is simply 'carried' by each field. It predicted laser beam refraction by the photoelectron clouds around accelerated particles which now also appears consistent with theory. [10] The core principle to remember is that, as in classical and geometrical optics, light changes speed on entering a shock or halo plasma by *both* n/c *and* the relative media speed factor v , as the time spent passing through a glass of beer or ion cloud is invariant with motion. This 'extra' variable, and observer frame selection must always be applied.

We show that light passing through a galaxy is therefore 'carried' at local c/n and advanced or delayed compared to that refracted at the edges, subject to galaxies vector in it's background CMBR rest frame, better fitting observation. This is true for *all* mass at all scales down to an electron. It is predicted that lens red shift will vary with potential and rotational vector to each edge of a galaxy. We know that non zero vacuum resistivity [10] for non ideal plane waves gives a very small dispersion, (Manjavacas./Abejo 2011) thus the model will help refine the Hubble Constant but also suggests cosmic expansion acceleration rate is overly high. The sequencing results from an exercise falsifying predictions of the DFM, which we conclude appears more logically consistent with observation than present models without new mathematical abstraction, but references to existing mathematical proofs are below. [9]

3. Scaling to the Universe.

Evidence suggests the quasar recycling process derived is fully scalable including solar mass black holes, and up to universes. Fig.4. Shows the toroid, considered a "neutron star", at the heart of the Crab nebula. This is currently dormant after the 11th century supernova.

FIG. 4. Toroid black holes are scalable. Centre of the Crab Nebula I.R. note the weak gas jet. The Tokamak form has intrinsic rotation and helical fields and jet vectors.



The ions themselves represent the inertial mass needed for the full equivalence of gravitational mass

with inertial mass, so really do represent the mass producing that increased gravitational potential, which really *does* increase with motion through the vacuum CMBR frame, as Einstein predicted and as in particle accelerators. There the search for dark matter appears to have been seriously hampered by the unrecognised dark matter photoelectrons propagated in the frames of both the magnet fields and particle bunches in proportion to energy and velocity. We find oscillation frequencies conveniently match that needed to scatter (Doppler shift) to meet the new 'c' of the inertial field of the bunch. The superposed particle wave energy is largely externalised to a macro wave when matter is formed. This provides the vacuum energy gradient, proportional to matter proving Newtons 2nd law. This phenomena is suggested by the model as the core of the solution to quantum gravity.

At the larger scale to similarities with the universe are too remarkable to go unnoticed. The DFM and recycling process would predict an 'axis' of the jet, but a spiral asymmetry around it. This is all as found by the Sloane Digital Sky Survey and ESO's Planck mission. All would be ionised, then re-ionised again locally in galaxy recycling rather than requiring the unexplained epoch. The process would be similar to the 'big crunch' but with a progressive quasar jet type 'whoosh'. On the other side of the source from our universe may be the opposite polarity universe created by the opposing jet, but in a galaxy these are remixed. The Multiverse is also a consistent concept, certainly sequential of not parallel, but many other universes may exist around ours. If we accept infinite time, then we have been through infinite recycling exercises already and will continue to do so, both locally and universally.

This is consistent with the concept of life after death, giving it a possible scientific basis, as, if time goes past in an instant once dead, the next time we awaken our particles will be part of another sentient being. We may of course have been much sunshine or cold rock in the time passing in between.

The Milky Way appears to be in middle age at present, as a spiral with a short bar. We will need to go a little further than another planet in our own galaxy if we wish to continue this cycle when the sun burns out because our black hole will recycle the whole galaxy, so we'll need to start the journey a little earlier. It should be possible to derive a life span of the universe, which may now have a slowing rate of expansion due to a slight red shift derived from the CMBR frame vacuum, The universe may also be approaching middle age, but we may find this a little more than 13.7Bn years.

The mechanism for faster than light travel may be provided at the heart of the model in quasars. Astrophysical jets are measured at over 8 times light speed from the Hubble frame. The 'head' of a jet will travel at $< c$ through the vacuum with respect to source so early preparation is needed for any hyperspace express way using the incenteric graded stream method. This effect

augments the 'shallow angle' explanation, which has a severely limited angular domain and very low range of high real speeds required. With incenteric motion, water in a river may comply with a law limiting any molecule to 0.1 mph wrt it's immediate neighbours, yet still move at over 5 mph wrt an observer on the river bank. With respect to an AGN's inertial frame superluminal speed may therefore be possible. A number of technical issues with this will also exist including finding a stable start point, crossing inertial field boundaries and harnessing the required power or safely hitching a ride on a natural jet. The problem of eventually avoiding a recycling of the universe in a few hundred billion years may simply be on a greater scale.

We suggest the model has shown that science may indeed be intuitive once our intuition is better informed.

Credits; Many at the Foundational Questions Institute and elsewhere who have highlighted the difficulties of explaining dynamic relationships without moving pictures, of overcoming deeply ingrained beliefs, and of distracting people from their own theories. Particular thanks to those offering encouragement and contributing to expansion of the model.

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