COSMOLOGICAL EXPLORATIONS 5

James B. Wright, Apr. 1, 2013

Abstract. My explorations in the science of Cosmology have been, and are, designed to discover what is known (tentatively, perhaps?), what is hypothetical, what is pure speculation, what is evidence, and what may have been misinterpreted, or even missed. A major misinterpretation has been the cause of the Cosmological Redshift (CRS). And, in the missing column, are the effectiveness of the Dark Mass (DM) in tying things together, and the importance of the Galaxy Cluster (GC) over all. (See Acronym's Pg. 9) My goal is to present arguments for the solution of some of these questions.

The Reader will discover an alternative cause for the CRS without the need for receding galaxies; how the gravitational lens is formed without the need for gravity to "bend" light rays; that the speed of light (C) is only seemingly constant here (in the Milky Way) but may be much slower, or much faster, elsewhere in the GC's; that Black Holes (BH) are completely unnecessary; that there is a mechanism for the renewal of galaxies at an efficiency of 100%; and that arguments are given for several other, more speculative, ideas.

Biography. As a layman in scientific research I have some 40 years of experience in radio, television, radar and microwave, etc. Always, when given ideas as gospel, things that make no sense in a Universe of objective reality, I look for alternatives reasons for what is being proposed. It was the idea of an Expanding Universe (EU) that resulted in my interest in astronomy and in the science of Cosmology. The newer ideas are my own and were developed using evidence and data available in the literature on astronomy.

Philosophical Support. In her philosophy of objective reality, **Ayn Rand** presents the axiomatic concept of Existence. She built her entire Philosophy of Objectivism based on this concept. I have selected Existence as it relates to Cosmology and express it in the form of an axiom that "Existence Exists", and as being self-evident, and as being the starting point for science as well as for philosophy. I totally reject the idea of "Something from/to Nothing."

Briefly: If Existence exists here, in our Observable Universe (OU), it must exist everywhere. It stretches outward in all directions and is presumably infinite. Furthermore, if Existence exists here now it must have come from a past eternity and, presumably, will last for another eternity. There can be no juxtaposition of Existence with non-Existence (out there somewhere), either in time or in space. Finally, if Existence exists here **now** after an eternity of burning, there must be some mechanism at work that results in a 100% efficient regeneration of all the existents in existence. Confirming such an Existence became the goal for my cosmological explorations.

A Redshift Experiment (in the shop). This experiment (See Fig. 3, Pg., 8) will show that a redshift in the light of a laser may be had simply by passing the light through a 21' pipe with its ends capped with glass, and then by increasing the density of the air within the pipe by pumping more air into it at a constant rate. The increasing density of the air in the pipe caused the wavelength of the light within it to shorten. During the test, more waves would enter the pipe, each second, than would leave it. We have a Redshift, but only while the density of the air was being steadily increased. Keep the higher pressure constant and no redshift will be produced. There is no actual loss in the total number of waves that will eventually reach the Observer. It just takes longer for them all to reach him than one might expect.

By using the mirrors we have arranged so that two separate light paths may reach the photo-diode, one at the red-shifted frequency and the other at the initial laser frequency. When two signals enter the photo-diode they will generate at least two new frequencies, the sum and difference, or beat frequencies. Our interest is only in the difference (beat) frequency, which may be about 600 cycles for a 10 sec test period when the air pressure is slowly raised by a factor of two. An oscilloscope is used simply for observation how far the new frequency is from the laser frequency.

It should also be observed that if the mirrors and photo diode and oscilloscope were removed and the laser fed directly into the pipe, we'd still have a redshift when the air pressure was being increased. Now, if a

second similar apparatus, with the air in its pipe pressurized as well, was entered by the redshifted frequency from the first pipe, it would act on the redshifted light from the first pipe to redshift the light even more. And so on for a third pipe, and for a fourth pipe, etc., etc. The redshift would be continuously compounded by the number of pipes cascaded. Of course, the same result could have been seen simply by making the first pipe longer.

What we have in the pipe is a microcosm of our Universe to demonstrate an <u>alternative method of red shifting.</u>

A Redshift Equation. A financial equation, which is used in continuously compounding interest, seemed appropriate for this job, if I used a negative rate of change:

$$F_o = F_s (e^{-Rt}),$$

with the F's being the observed and source frequencies (in hertz); the small e being Euler's number (2.7183...); R being the rate of decrease in frequency in hertz/hertz per second; and t being the time, in seconds, that the light took in traveling from the Source to the Observer. This may be plotted (Fig. 1, Pg. 6) for frequencies from 10^{10} to 10^{15} hertz and for distances of 0 to 60 billion light-years (BLY). For this study $5x10^{14}$ hertz is always used as the emitted (or source) frequency, and 43 BLY's, expressed in <u>light-seconds</u>, being the radius of the OU.

In such a graph a frequency of 2.75×10^{11} hertz was used as the observed frequency and with it I was able to derive an R of 5.34×10^{-18} hz/hz/sec. This F_o is very rough in that the literature presents only velocity, not frequency, in its redshift reports. I suspect that R is considerably smaller than my calculations indicate, and that F_o is much higher, which would make the slope of the chart less steep.

So, what is needed is a medium in space that is continuously increasing in density at some constant rate. If found, it would develop a redshift in any traveling electro-magnetic wave by continuously compounding the effect, without the source frequency changing, or in having the Source moving away from the Observer.

The Medium. Throughout the Universe are Galaxy Clusters (GC's); great aggregations of galaxies with perhaps as many as 5,000 galaxies in each cluster (See Fig. 2, Pg. 7). This means that if our OU has 100 billion galaxies it could have about 20 million GC's! Many GC's have clustered together, with great voids in the space between them. So what fills these voids, and fills the spaces between the galaxies inside the cluster and even the space within the galaxies within the GC's? This space (and all space) belongs to the DM of the Universe (verified by **Vera Rubin**), and this arrangement of GC's and the DM continues throughout the OU and, we suggest, on to infinity. Such a DM is absolutely essential, for it solves many of the mysteries that now face us. Not happenstantially, this DM forms the medium needing to support the permeability (μ), of 1.257×10^{-6} Henry's per meter, and permittivity ($\square$), of 8.85×10^{-12} Farad's per meter, of space, as seen around the Milky Way. No longer must a "vacuum of nothingness" do something.

Galactic Clusters. Each GC is bound together by gravity, with the center of the cluster being a monstrous spiral galaxy, called a Seyfert, within which is the center of gravity (COG) for the cluster. All the various masses in the cluster are being slowly drawn in towards this COG. Surrounding the Seyfert are the thousands of galaxies and the DM, a mass that is gravitationally responsive (and possibly self-repellant).

As the galaxies are being drawn inward towards this central Seyfert galaxy, they are being squeezed together and made smaller as they encounter an ever more powerful gravity. The DM is also affected by the increasing gravity by becoming more dense, a density increase that operates throughout the GC, and, similarly, in all the GC's in the OU. Light, traveling from any given Source to an Observer, through a path whose length is fixed, will be constantly drawn upon to provide more waves to fill that path, and so will fit the equation provided earlier and thus cause the CRS.

Gravitational Lens. Of particular interest here is that the DM has been formed into a GC sized spherical Gravitational Lens (GL), which allows light from galaxies from far beyond to pass through and be focused on an Observer far beyond in the opposite direction. This gives us a GL, akin to the Luneburg Lens (LL),

as seen in Fig. 6, Pg. 9, but with a far greater range of densities and of dielectric constants (K) than those used in microwave communications, which go from a K of 1 at its outer surface to a K of 2 at its core.

Disposing of the Masses in the Seyfert. A GC, with its massive central Seyfert galaxy drawing all mass into itself, sounds like an ideal feed for a Black Hole (BH). And it could be such a feed, except that we cannot afford to dump all unwanted masses to simply disappear in BH's. The masses are all recovered!

Halton Arp spent much of his time as an Astronomer observing the sky. Among the peculiar objects he studied were the Quasars. He discovered that Quasars appeared to be ejected from the Seyfert galaxies at a high velocity, with two Quasars appearing every 7.5 billion years. Furthermore, he also found evidence that these Quasars were themselves evolving into full fledged galaxies! Their speed will gradually slow, and, as they expand into normal galaxies, they and their DM becomes fuel for their parent GC, or even for other GC's. If so, we have mass continually entering the central Seyfert galaxy and mass continually leaving that same galaxy, hopefully at the same rate. All we need now is for a nuclear physicist to explain how the tremendous pressures and densities and temperatures, being developed within the Seyfert's nucleus, could produce the necessary nuclear transformations. He would also explain the mechanism that ejects the Quasars at such high velocities. Ashes of dying galaxies and of the DM are all being transformed into brand new galaxies, via the Seyfert/Quasar route! The exceptionally high redshift/blue shift of the Quasars would be caused by a Doppler redshift added to/subtracted from the average CRS's for that region, causing them appear to be farther/closer than they actually are.

The chart Fig. 4, Pg. 8, shows, graphically, our local GC, indicating that the gravity gradient of the Seyfert, as well as the density gradient of the DM within the GL's, both calculated to distances far beyond the Milky Way (MW). If we accepted that as the μ and □ of the DM of space will vary in accord with its density, then the speed of light (C) can be expected to vary and will be relatively constant only near the MW. The dielectric constant (K) of the DM will vary from much higher that 1 nearer to the Seyfert to much less that 1 out beyond the MW. C, the speed of light, will vary accordingly.

The Earth. While the Cosmos itself may be infinite it also reaches into the MW. Somewhere in the middle are the Sun and its planets, and these all have stories to tell, when the digging is deep. "A moving charge generates a magnetic field", we were told in High School. So, out of curiosity why not put a charge on the surface of each planet where its rotation would generate a magnetic field? Then, let's treat the Earth as a solenoid and calculate how much charge there'd have to be to get its reported magnetic field. (See the CalcTool, Solenoids, on Google, which greatly facilitates calculations.)

Now, by using the size of the planets and their direction of rotation, we can find how much, in amperes (1 Amp/Sec. = 1 Coulomb = 6.34 x 10^18 Electrons/Sec.), was required to produce their reported magnetic fields. By noting the position of the planets North and South poles we were able to determine whether that charge was positive or negative. Amazingly, the planets are all positively charged, except for the Earth. Why the exception? The Earth has an ionosphere and an atmosphere. Together these form a concentric spherical capacitor, with the atmosphere being its dielectric. Could it not be that the ionosphere is intercepting whatever it is that provides the positive charges to the other planet? So the ionosphere becomes positive, effectively isolating the Earth and leaving it negative? If so, then we'd expect North to be where it now is, so long as the Ionosphere to Earth capacitor was in good shape.

If the **Solar Wind** were positive in order to charge the planets, so would be the Sun. This leaves the 4% mass loss of energy from the Sun to carry away its negative charge. So, we have an energy that has mass and so is gravitationally responsive, and is intrinsically negative.

The proof is in the Earth's rocks. Geologists tell us that the Earth has undergone a large number of random pole reversals in its history. So, all we need is for a massive solar storm to short out the ionosphere to Earth capacitor for a while, putting the positive charge from the ionosphere onto Earth itself, long enough for its rocks to magnetically record the change. Then, when the capacitor has mended its wounds, it would restore itself to the negative mode, and North would return to its normal position, opposite that of the other planets. For this study only five planets were used: The Earth, Jupiter, Saturn, Neptune and Uranus.

North/South Pole Reversals (PR). According to Wikipedia (Geomagnetic Reversals) the last reversal of the Earths magnetic field occurred from 900 to 780 thousand years ago. According to the record there was a major reversal about 65 million years ago, and, also according to Wikipedia, the dinosaurs became extinct about 65 million years ago. This correlates with the impact of a massive Chicxulub meteorite striking the Earth in the Yucatan peninsula, also about 65 million years ago. One would expect that this meteorite could have caused a pole reversal (PR). The evidence suggests that these reversals may last for 100,000 years, or more, in the abnormal state. We are now in the "normal" state, but are overdue for a reversal. It has been suggested that, while we probably will survive such a reversal, there will be a major interruption to our electrical grids and to our communications.

The Earths Poles. Below are two drawings of the Earth (Fig 5, Page 9). True North (TN) which is todays rotational axis of the Earth (and our generated North, which is also on that axis) and which gives TN some muscle; Residual North (RN) which is the North of a North/South that I propose as having been magnetized within the Earth when the Earth had a different rotational axis; and Core North (CN) from the magma within the Earth. Its effects may be seen in the wandering of our present Magnetic North (MN). Of course, MN is the summation of these other North's. Note that MN is the most powerful with a Normal Earth and least powerful with a Reversed North. The RN and the TN should both be 'seen' during the Reversal of the Earth's North. I.e., we will have two North Poles and two South Poles, one being pair seen from the Northern hemisphere and the other pair being seen from the Southern hemisphere. At such times the MN will probably not be seen at all. To reiterate, this assortment of North's is true whether we are in a Normal North or in a Reversed North.

If a charged planet generates a magnetic field, that field would be located at its TN. This TN field should be felt, or 'seen' by our compasses. The fact that MN is some 12 degrees South of TN suggests that there must be another North south of MN so that the sum of these two North's develops our present MN. This new North I have called RN, which could occur only if the Earth once rotated on a different axis, which at that time, would have been its TN.

Impact of Chicxulub on Earth. In the above I propose that the Earth once had a different axis of rotation. It is believed that the force of Chicxulub would not only shifted the Earth's axis but would have shattered itself into small pieces, and raised a massive amount of debris into the air. The momentum of the Earth itself would generate a far greater rotational force than even Chicxulub, so the effects of the meteor on its rotation would be minimal, although it probably would jar it a bit out of alignment. Note that the present position of TN came about as a result of the impact of Chicxulub, if my speculations are correct.

Mars. We are told that once Mars had an atmosphere and presumably an ionosphere, very similar to what the Earth now has. If so, it is not unlikely that this setup would have continued for some hundreds of millions of years, long enough to have imbedded a RN in the planet that had North pointing downward. When the atmosphere disappeared and the ionosphere no longer prevented the positive charge from reaching the planet it would have reversed itself so that North is now pointing up. These two North's, being equal and opposite and both being on the TN axis, should cancel out each other's fields so that we should now have no detectable MN, despite Mars having a rotation, and being positively charged.

"Lifter" of Thomas Townsend Brown. I believe that the Dark Mass (DM) of space is intrinsically negative (See above "Solar Wind") and that it should be more properly called the Negative Energy Mass (NEM). This NEM fills the Universe and, as it has mass it is responsive to gravity, and, in that if it is negative it will be self repellent. It will also be attracted to or repelled by independently isolated charges that are separated into positive and negative locales. That this, or its equivalent, is possible will be seen.

This effect, this push and pull, was detected by T.T. Brown some fifty years ago, and was thought to be "anti-gravity". His setup consisted of applying a very high DC voltage (~200,000 v.) to a very small capacitor to develop localized but separated charges. His major direct problem was the ionization caused by the HV and so his system worked best when in a vacuum. He did determine that his capacitor would rise, having developed a thrust through the capacitor from its negative side to the positive side. He further

determined that there appeared to be a "pull" on the positive plate of the capacitor and a "push" on the negative plate. These forces obtained whether the capacitor was held in a horizontal or a vertical position.

Consider such a capacitor immersed in a sea of the NEN. Would not some volume of the NEM exhibit a charge equal to that on the plates of the capacitor, a charge that would "pull" on the positive plate and "push" on the negative plate? Observe that the DC that separates the charges does little work on its own. It simply makes it possible for these two charges to "feel" the NEP as negative a charge, in effect.

The Conclusions. We now have a Super-Universe. Supporting this are the observations of the Hubble telescope in their long time-exposure photographs. The Universe just doesn't stop! In this ocean of GC'c lies our own, with its own Seyfert, possibly being the Great Attractor. Generally, a full fledged GC, will have reached a limit in size, the critical size needed for the nuclear transformation to be initiated. The GC is comprised of material mass and the DM, both of which are a part of this transformation. Is it not logical to conclude that this ocean of GC's, each with its own renewal engines at work, fills the OU, and on to infinity? No need for BH's!

Addendum: One last thought: If the mechanism for galactic renewal is through the GC generating Quasars, and this has been going on for hundreds of billions of years, can we not conclude that all galaxies, including the MW, were born as Quasars and that a galaxy is first formed by the rapid expanion (almost explosive) of the Quasar? The mass of a Quasar is equivalent to that of an entire galaxy and this mass then ends up as a galaxy of stars. When their apogee is reached the stars begin their trek back towards the COG of their galaxy. We should then expect the galaxies to be of all ages, but following a similar cycles. Some may be spiral, others may be elliptical or globular, depending on whether their Quasar was rotating or stationary, but all are at some point in their expansion-contraction cycle.
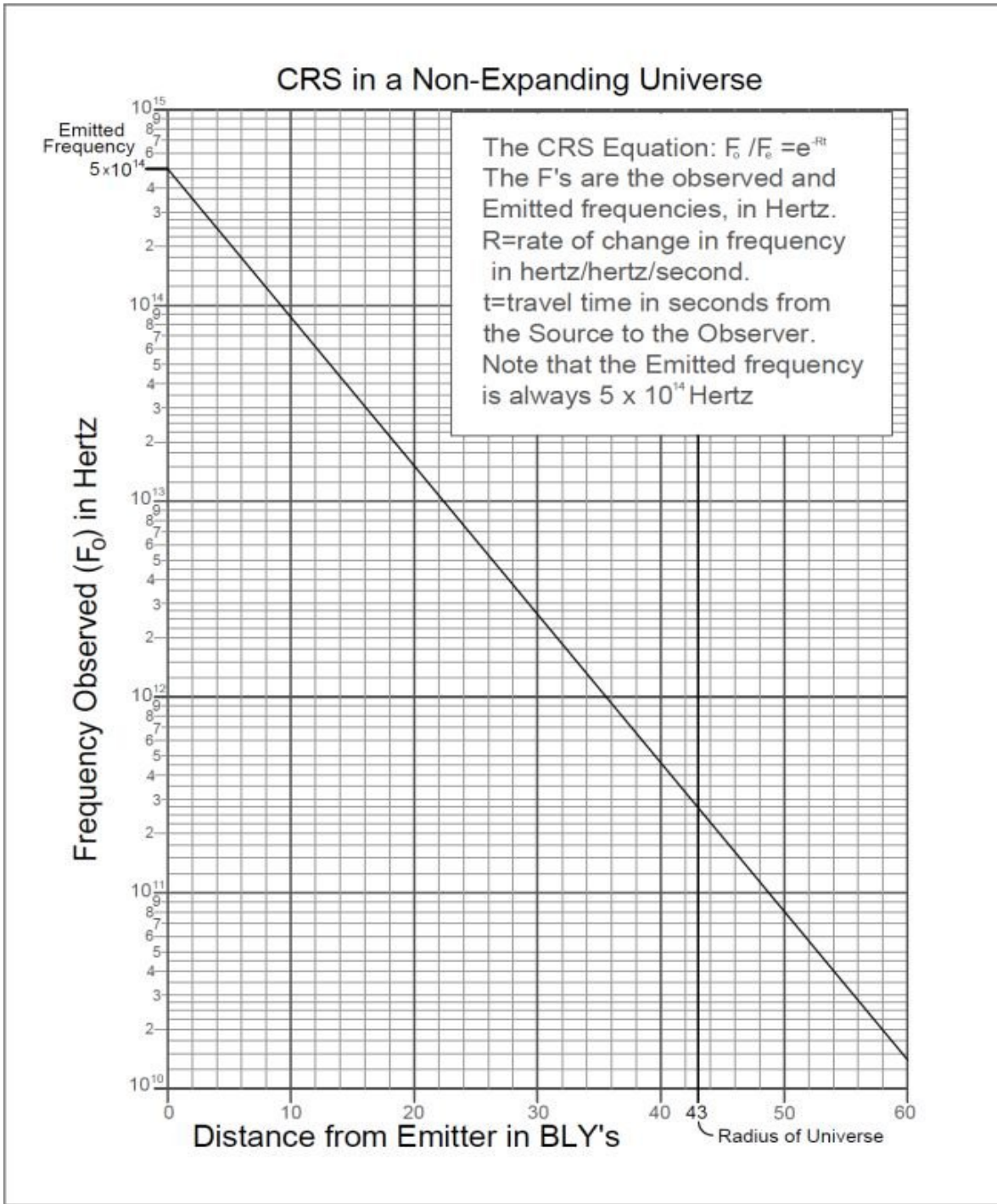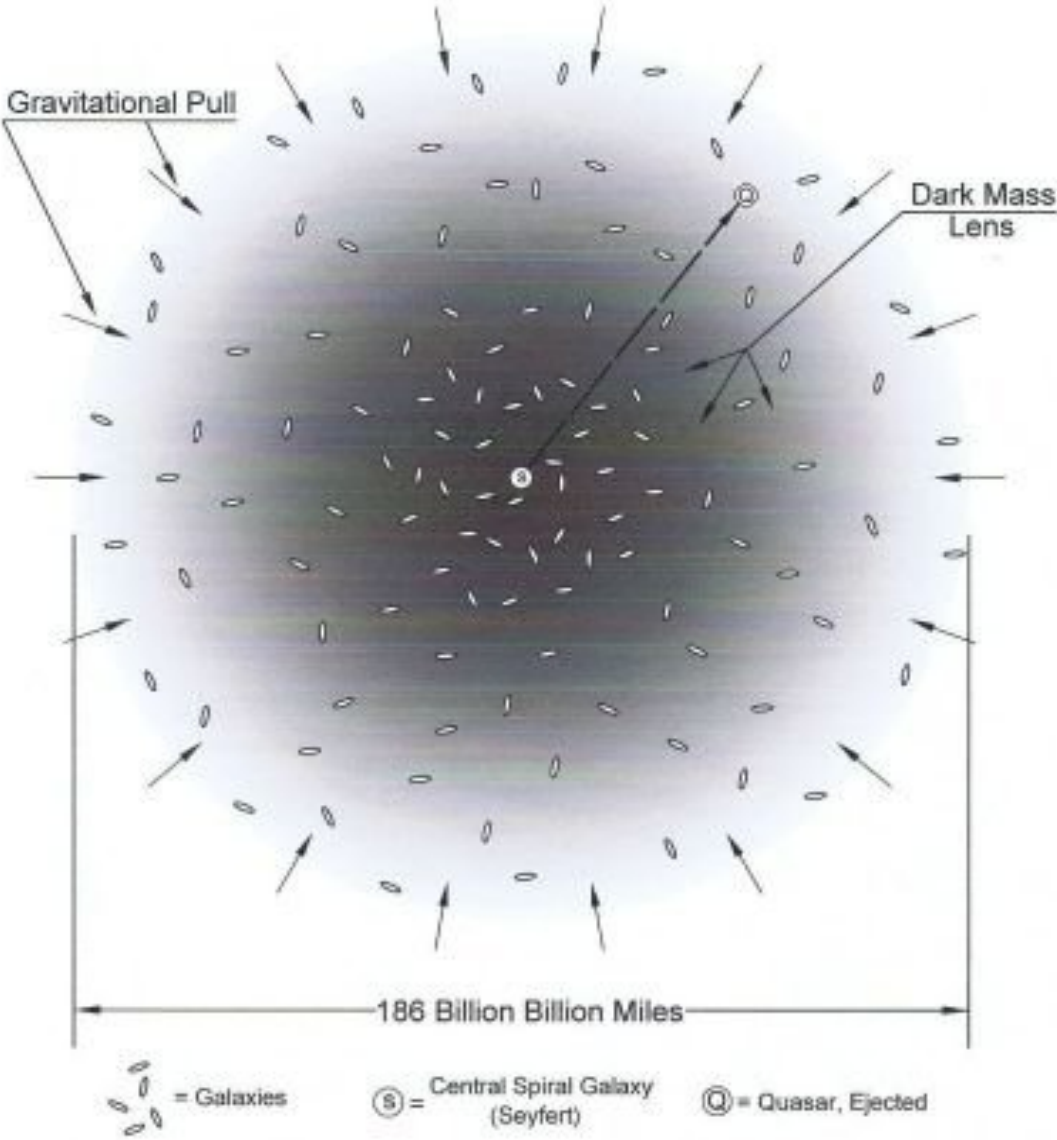
Fig. 1. Cosmological Redshift

Fig. 2

Fig. 3

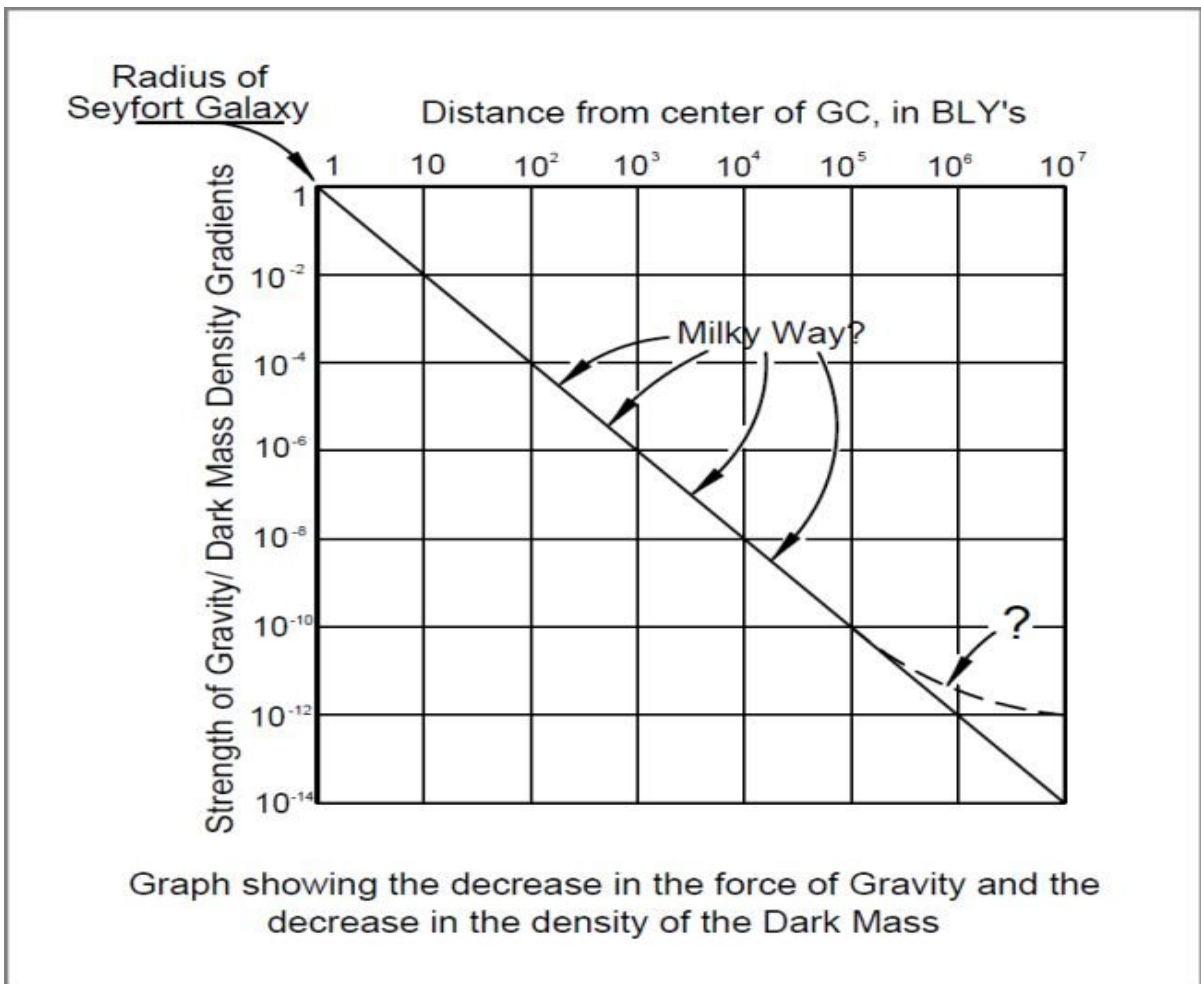Graph showing the decrease in the force of Gravity and the decrease in the density of the Dark Mass
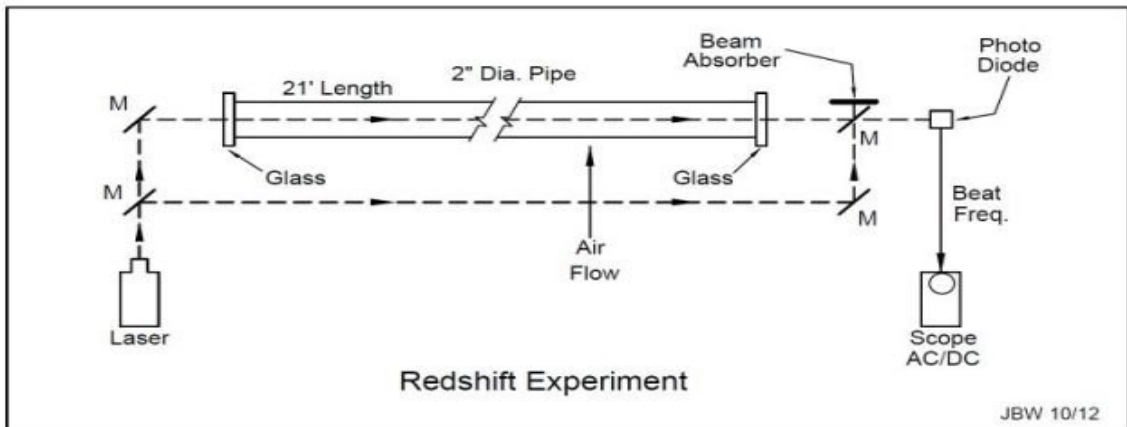
Fig. 4
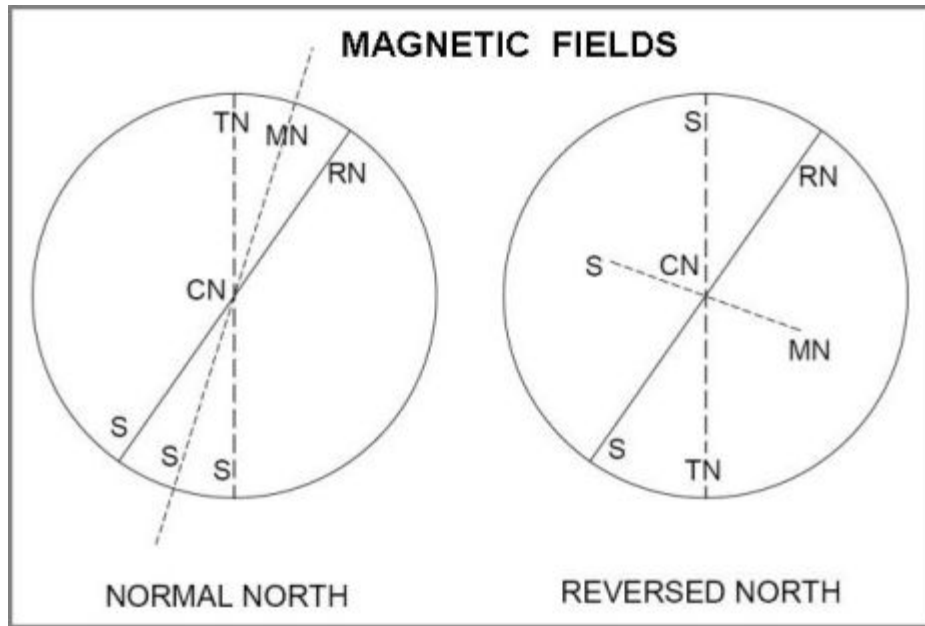
Fig. 5
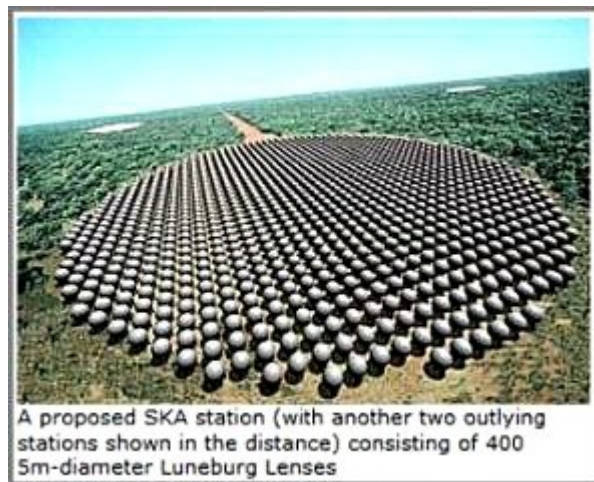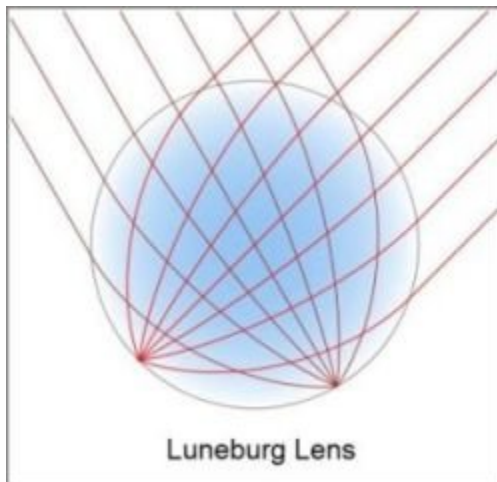
Fig. 6.

FIO re Luneburg Lenses.

Acronym's:

BH	Black Hole	BLY	Billion Light Years	C	Speed of Light
CN	Core North	COG	Center of Gravity	CRS	Cosmological Redshift
DM	Dark Mass	EU	Expanding Universe	FIO	For Information Only
FYI	For Your Information	GC	Galaxy Cluster	GL	Gravitational Lens
K	Dielectric Constant	LL	Luneburg Lens	MN	Magnetic North
MW	Milky Way	NEM	Negative Energy Mass	OU	Observable Universe
PR	Pole Reversal	RN	Residual North	TN	True North
□	Permittivity of the DM	μ	Permeability of the DM		

CalcTool calculators: for Solenoids; for two-plate capacitors; for two charges.