

THE ELECTROMAGNETIC SPECTRUM DETECTION LIMITS AND OBSERVATION PRINCIPLES FOR AN EARTH OBSERVER WITH CORRELATED ELECTROMAGNETIC SPECTRUM DETECTION ZONES

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Abstract:

The hypotheses gained from the conclusions of the laboratory experiment submitted as an experimentum crucis herein, allows the crucial understanding to unlock numerous mysteries of the universe that will resolve many unexplained abnormalities, improve interconnecting theories, and cement underlying assumptions to provide better and greater scientific reasoning and clarity.

The revolutionary conclusions proposed in this paper from the laboratory experiment results are, the acknowledgment of the correlation between electromagnetic spectrum detection limits and the existence and observation of electromagnetic spectrum zones, which also reveals the need to facilitate the composition of a series of observation principles for an earth observer.

1. Introduction:

There are a series of controversies and/or unexpected results regarding the present understanding of our universe which are now routinely uncovered or exposed because of the vast amount of new data and observations from the increasing number of and the vast spectrum of improved instruments.

There are also many hypothetical inconsistencies between theory and observations that are without empirical scientific substance that are often based on flimsy underlying assumptions. Theoretical models made to fit an alarming series of inconsistency criterion and axioms often based on increasing lack of evidence from poor conclusions, and/ or unsubstantial parameters.

In the scientific discipline of science, a theory by definition is not unsubstantial speculations of weak interconnecting and underlying assumptions but such a theory may exist as our best present model with gloss over acceptance but usually gradually increasing with more unexplained abnormalities or contrary unexpected observations. The solutions offered is the steady procession of an increasing wildly arrangement of fit-for-the-purpose speculative mathematical solutions and/or ideas but without logical evidence or scientific substance.

A strong theory is testable and derived by experimentation that can be used to make accurate predictions and is supported by measurable data from observations with logical reasoning that has not been falsified.

2. The Experimentum Crucis:

I propose this simple laboratory experiment using Light emitting diodes (LED's) as the experimentum crucis that will be instrumental for creating many hypotheses that will revolutionize and fundamentally

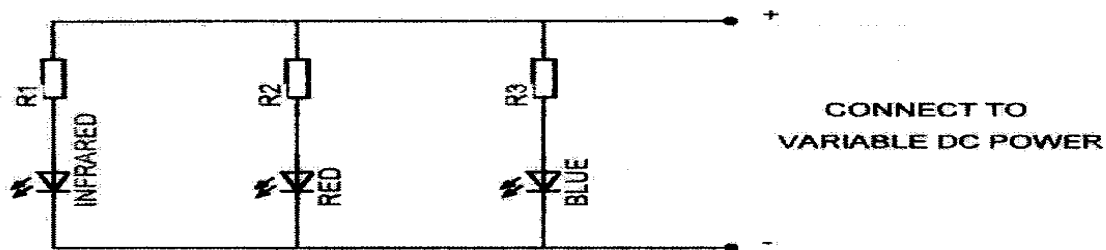
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change our understanding of the universe in the physics, astrophysics, astronomy and cosmological sciences.

It can be confirmed by research into the subject that the solid state physics of LED's create pure electromagnetic (EM) spectrum energy as visually confirmed by the existence of clear bulb LED's that are UV light, infrared light (IR), or of individual specific colours of the visual spectrum created by a process known as band-gap energy.

2.1 Prototype model design for conducting the electromagnetic spectrum experiment:

Similarly assemble and construct the following parallel circuit.



R1 = 165 ohms. R2 = 115 ohms. R3 = 45 ohms.

IR LED = 940nm. Red LED = 630nm. Blue LED = 470nm.

Variable power supply = 5 volts DC – 0 volts DC

2.2 Conducting the experiment:

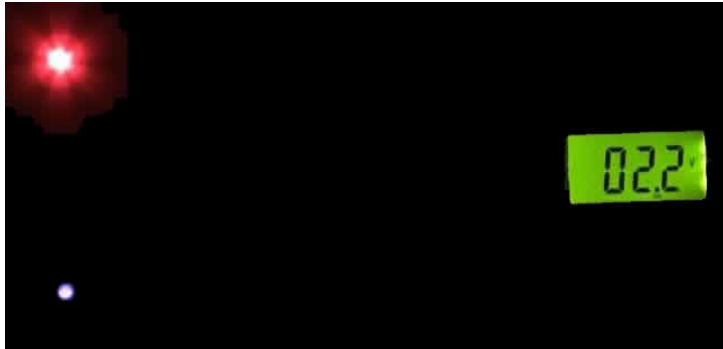
Using a video camera (to see the light from the IR LED) begin the experiment by supplying enough energy to light all 3 LED's. Start decreasing the power supply. As the energy level is decreased you will observe that the blue LED is the first EM spectrum frequency to disappear followed by the disappearance of the red EM spectrum frequency, to which the infrared (IR) EM spectrum frequency is the only remaining spectrum shining. Continue operating the experiment by decreasing the energy level to see the IR light also disappears from view.

2.3 Analysing experiment results:

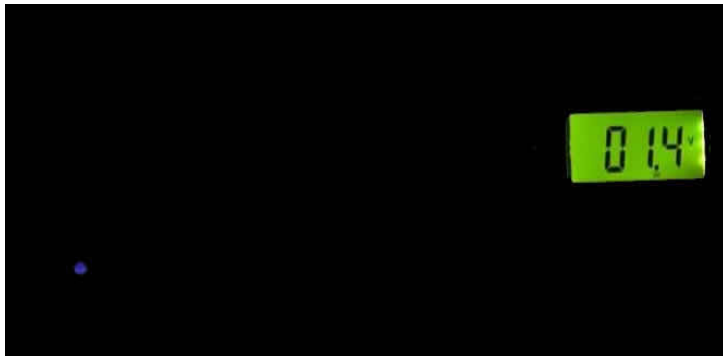
The results visually seen from the EM spectrum experiment is that when the light energy from the EM spectrum is weak then the higher energy EM spectrum will not be detect.

The reciprocal relationship gained from analysing recorded observations from the universe in unison with the results from the experiment, the following logical observation principles can be determined; as distances increase; the energy detected from the object is lower. As the distances increase the only energies seen are those EM spectrums of the lower energies which will continue to diminish into lower EM spectrum frequencies until no longer detectable to the observer.

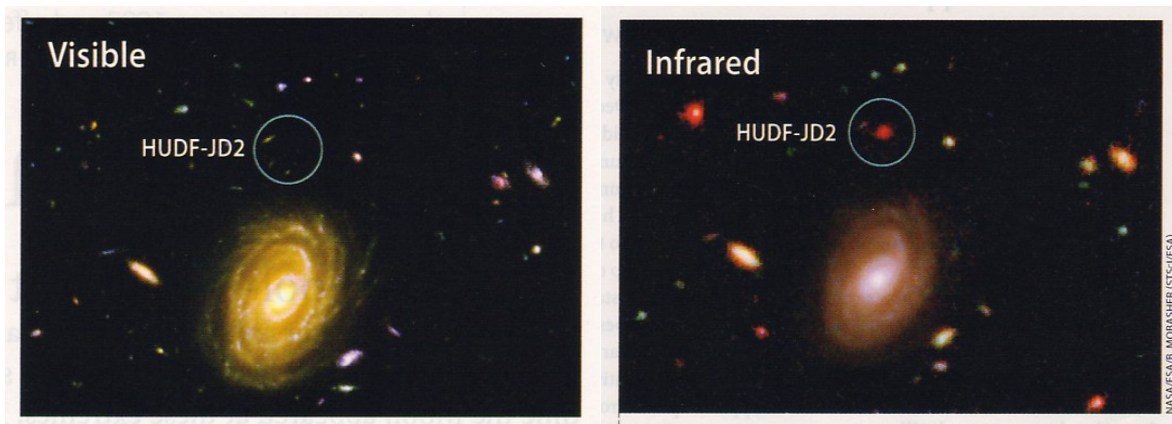
2.4 Comparative IR and Visual Spectrum Observations:



The top LED is the red EM spectrum. The bottom LED is the IR spectrum. Both spectrums are seen at the higher voltage (2.2 volts).



When the voltage is lower (1.4 volts) the IR is the only spectrum seen.



The Hubble Ultra Deep Field at the edge of the known universe shows a galaxy in the IR and nothing in the visual spectrum.

These Hubble Ultra Deep Field recorded observations of HUDF-JD2 location is a real life visual confirmation of the correlation of closer distance and the ability to observe higher EM spectrum energies similar to the reciprocal conclusions of the experimentum crucis that shows the situation of

when the energy detected from an object is weak (when the object is of greater distance away) – then only the lower energy frequencies can be detected.

3. The Existence of the Electromagnetic Spectrum Detection Limits:

A scientific decision has to be determined for what is the true nature of energy. Physicists have to recognize that there is a stronger energy level detected when the subject observer is closer and a weaker energy level detected when the subject observer is of a greater distance away. There are plenty of measurable natural occurring examples to support this hypothesis. Stand near the Sun and get blinded by ultra violet (UV) EM spectrum light – stand on Pluto and barely feel or see any visual light. The reality and nature of energy is; weak or strong which is detectable or not detectable.

The hypothesis that all EM spectrum energies will travel into infinity together in the vacuum of space is a non-scientific notion or opinion with no empirical evidence of an experiment or observations to support those claims, whereas the case made for the existence of the limitation of EM spectrum energy has many observations in all the spectrums in the visual records and can be physically experienced in natural occurring examples within our living zone, and the effects confirmed by the experimental results of the experimentum crucis.

4. Electromagnetic Spectrum Detection Zones:

The astrophysics for the existence of electromagnetic spectrum detection limits described also means there must be weaker EM spectrum zones that exist for all frequencies from objects that emit energy. More specifically (for this paper) occupy space beyond our observable visual light universe, and for the colours of visual light.

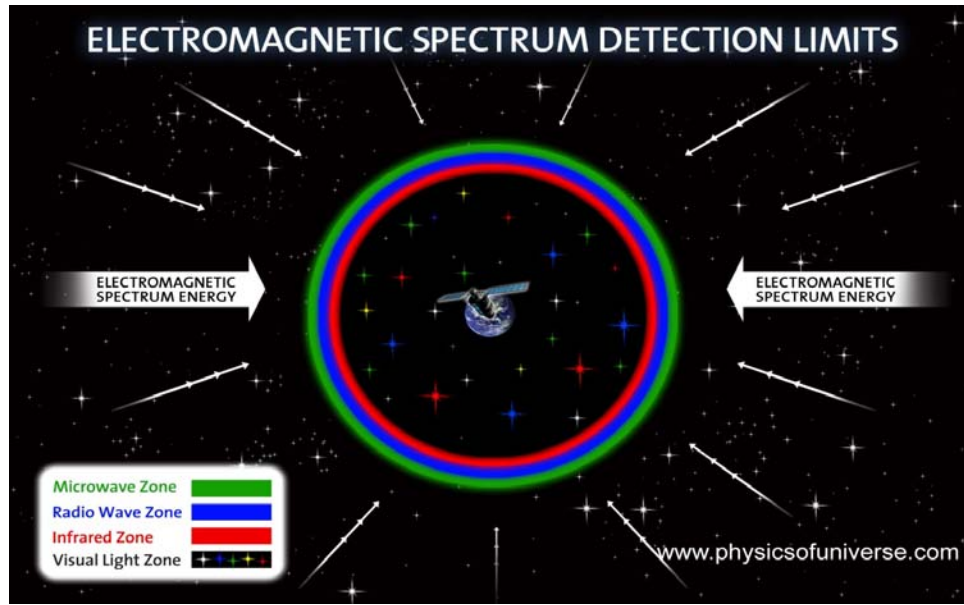
Observation principles gain from the results and conclusions are that stars, galaxies, clusters, etc. radiate energy in two detectable states for the earth observer:

1. There is the energy of the object called true energy.
2. There is the available EM spectrum detected called light energy

Other observation principles gained are:

3. When an object in space radiates energy the energy from it decreases from strong to weak as distances increase.
4. When the distance is greater only a lower frequency is detectable and the higher energy frequency will be no longer detectable.
5. The existence of weak energy radiation and strong energy radiation create observable EM spectrum zones for all EM spectrum frequencies.

Logically applying these facts allows us to detect a larger universe beyond our observable visual universe which I call the detectable universe discovered by the science method and/ or by using scientific methodologies.



This poster illustrates four EM spectrum zones with the earth observer in the centre

If stars and galaxies exist beyond what is seen in visual light - they would radiate EM spectrum energy as illustrated in this poster. The observation principles state that as distances increase the energy detected from objects would be of lower energy levels for the earth observer. The energy levels detected from those objects would be observable EM spectrum zones.

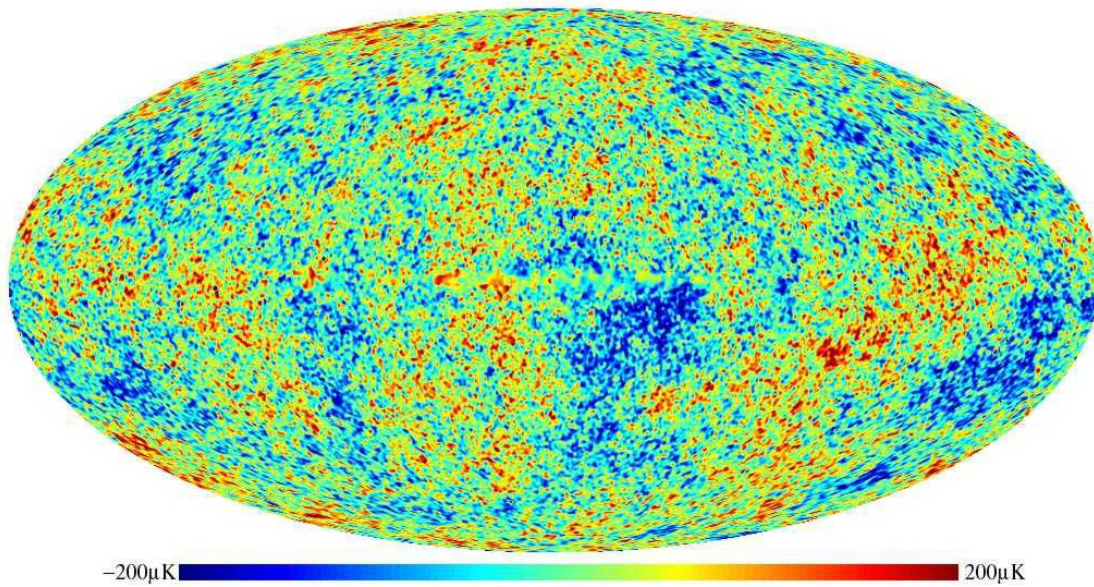
The microwave zone, the radio wave zone exists in two states. They are emitted by stars and galaxies within the visual light universe and mainly by galaxies outside of the visual light universe (shown above as arrows beaming towards the earth observer).

The infrared spectrum has a unique dual property – it occupies two zones. The second zone is not detectable by the earth observer and it is located on the other side of the microwave zone (not drawn on the above poster). This means the light energy from the galaxies we see in the IR zone are closer to us as illustrated by galaxies such as HUDF- JD2 shown on page 3.

The earth observer cannot see the second IR zones that exist beyond the microwave zone therefore the microwave zone is the last lights for the best view of the detectable universe that exist beyond our visual universe. The radio wave zone shows less detail so it is not as inclusive in the inclusion of objects so the microwave zone provides a broader view of more detail.

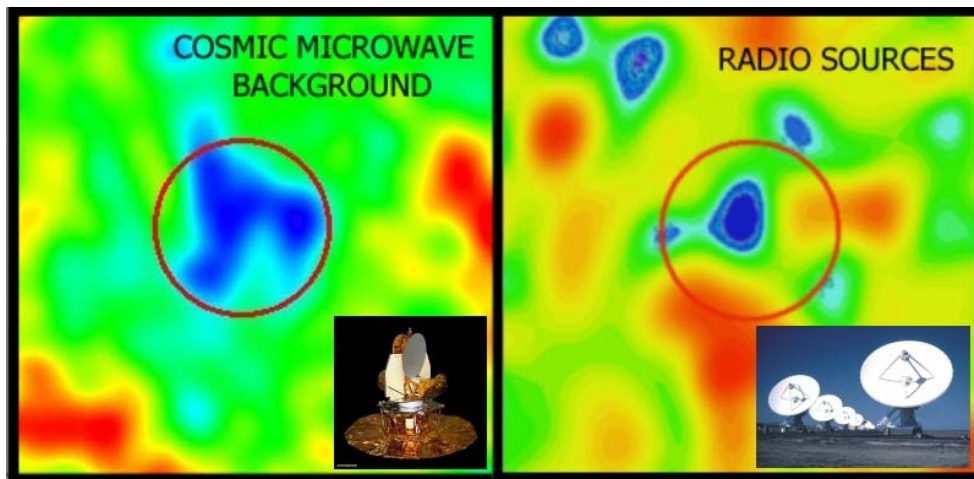
As distances increase in the visual light zones at some point stars and galaxies will appear to be a lower energy colour (as shown by the blue and red LED's). This explains why there are variable stars that will change colours if located at the right observation location. It also explains why there are so many red stars throughout the universe and as recorded by the Hubble Ultra Deep Field image at the distance edge of the visual universe, many red galaxies. When the energy detected is lower – the colour of the object will be a lower energy colour.

The most famous and studied detected EM spectrum zone is the Cosmic Microwave Background Radiation (CMB).



The CMBR image provided by NASA

This is an image of the EM spectrum in the microwave of galaxies and galaxy clusters that occupy the regions of space that exist beyond what we presently know as the observable universe. It is a picture of the last detectable light from the rest of the universe from distance galaxies and galaxy clusters beyond our visual universe.



The blue areas are visual proof of the radio wave zone in the CMB, known as cold spots, which are areas without a close enough galaxy or cluster to emit detectable microwaves. Instead these areas emit the weakest EM spectrum energy of radio waves.

6. Conclusions:

The true explanation for many phenomena in the universe can be disclosed by acknowledging the EM spectrum detection limits is real and factor in how the observation principles apply.

The observation principles and EM spectrum detection limits also reveal that the universe has greater depth based on energy detection.

The basic fundamental observation principle that physicist and astronomers need to understand is that an observation from the universe may be contemporaneous – to which a right decision has to be made.

Another fundamental observation principle is the wrong understanding of what is seen creates discombobulating science.

Many new hypothesizes can be formulated from the results and conclusions gained from the experimentum crucis – some of which are:

1. Light distance is affected by energy strength not time.
2. Light does not stretch from space expanding but because the energy detected is weak.
3. IR galaxies at the edge of the universe are not baby galaxies but the detection of low energies from distance normal galaxies.
4. The CMB is the last lights from distance galaxies and galaxy clusters.
5. The light detected from stars and galaxies can exhibit a specific colour based on energy level detected and not based on the energy radiated from the source.
6. Light energy and temperature are not necessary inclusive properties for descriptions of objects seen in the universe.
7. Lower observed frequency phenomenon may be the only frequency exhibited from an object but not necessary the only frequency emitted.

Furthermore new principles and laws descried from the experimentum crucis are to be released in later science papers to explain an alternate explanation for the redshifting of observable objects, and the true location of gamma-rays burst.