On a Global Relative Revolution of the Universe Around Earth Induced by its Spin and the Outlines for a New Mechanism for Magnetic Fields Generation

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Abstract

Although relative motion in the special theory of relativity, can have true and verifiable results, at least for a particular observer. But we ignored it in the case of the rotation of Earth and other planets and cosmic objects, around their own axes. My aim is to find (Earth's Resultant Inertial Rotation) ERIR. This ERIR is resulting from the curved path due to gravity, and the circular path of an observer due to rotation, out of the whole rotation. And for this ERIR an observer can assume the state of rest, while the whole observable universe will be revolving relatively around him in the opposite direction. This (Universe's Relative Revolution) URR will be displayed in conformity with circular motion laws. I was able to find an equation to describe this type of ERIR. By using this equation and postulating that aberration of distant objects light, would allow us to see a component of the tangential velocity produced by the URR along our line of sight. We reinterpreted the Hubble phenomenon, and predicted a blue-shift on the other side of the sky, mostly behind the zone of avoidance. The dependence of Hubble's constant on aberration angle is emphasized. Therefore we concluded that, the great attractor, the Virgo infall, the CMB dipole, the dark energy, and the fingers of God theories and the likes were based on illusions. All the CMB anomalies detected by WMAP spacecraft, and Planck spacecraft, can be explained. And the pioneer effect, can also be explained, the diurnal and annual variations of the effect also accounted for. Also it is possible using this global URR to find a universal mechanism for magnetic field generation. Which can be applied for all cosmic objects, from asteroids to magnetars and even galaxies, by assuming an excess in the positive charge due to protons, in deep space. Therefore we will have a solenoid mechanism for magnetic field generation. But we will give only the outlines, so that other investigators can develop it further.

1 Introduction

1.1 The resultant inertial rotation

According to Einstein's special theory of relativity, an observer moving inertially with respect to the rest of the Universe, can have the right to claim being at rest, while the rest of the Universe is claimed by him to be moving in the opposite direction. Observers can even verify their claim by conducting experiments within their frames.

Now my quest is to find a similar situation for an observer on the surface of a rotating spherical object with a sufficient mass. This object can be any planet or any star or even any asteroid, but we will concentrate first on our planet Earth, and the results can be generalized later. We assume Earth to be a perfect sphere with its well known parameters. For an observer at any latitudinal circle there are only two factors acting on him, first the gravitational field given as $\frac{Gm_e}{R_e^2}$ where G is the gravitational constant, and m_e is mass of Earth, and R_e is the radius of Earth. The second factor affecting the observer is the tangential velocity v due to rotation.

Now we can argue that, since gravity curves space, and also since rotation results in a curved circular path, therefore for a very brief instant of time no matter how small, the two curvatures can give rise to genuine inertial motion. This condition will be broken and then repeated again. And out of a complete one rotation, there will be a resultant inertial rotation with an angular velocity which we denote by W_e for Earth.

This above mentioned angular velocity by definition is proportional to the gravitational field, and to the tangential velocity, hence we can write :

$$W_e = k\frac{Gm_e v}{R_e^2}$$

Where k is the constant of proportionality. And by taking the dimensions of all quantities, the dimension of the constant turns out to be that of the inverse of the square of a velocity. And since we know only of one velocity that is a constant which is the speed of light, I chose the speed of light, and we can write: $k = \frac{1}{c^2}$ where c is the speed of light . Now we can write:

$$W_e = \frac{Gm_e v}{c^2 R_e^2} \tag{1}$$

Eq.1. will be my first postulate. The validity of this equation can be judged by the predictions made using it. This angular velocity have to be interpreted as the angular velocity of the (Earth's Resultant Inertial Rotation) or ERIR for short. This angular velocity of the ERIR is resulting from the curvature due to gravity and the circular path due to rotation.Being inertial It would be impossible for an observer on Earth to detect this rotation, by using Foucault's pendulum for example. The observer can assume the absolute state of rest with respect to this rotation. And only by observing distant objects one can see the

(Universe's Relative Revolution) of the Universe, or URR for short. This is a relative revolution of the Universe, observed by an observer on Earth. And by observing distant objects the effects produced by this revolution, are equivalent to the effects produced if the Universe as a whole is revolving around Earth. We denote this relative angular velocity of the Universe by W_u . What needs to be emphasized is that, this is only a relative revolution of the whole Universe with respect to the stationary Earth as assumed by an observer on its surface. Therefore W_u is the angular velocity of the Universe. Any observer at rest on the Earth's surface can detect this relative revolution of the Universe under suitable conditions. And since the Earth's daily rotation is counterclockwise, hence ERIR is also counterclockwise. And if the angular velocity of the ERIR W_e considered positive then the angular velocity of the URR W_u must be negative. And we can write $W_u = -W_e$. And as we will explain in subsection.1.4 Any observer with a negligible mass compared to that of Earth is orbiting it, would be able to detect this revolution. And to further clarify this new concept, consider the daily rotation of Earth, as we know, Earth completes one rotation in one day. And during one full day the effects observed by an observer at any latitudinal circle are equivalent to one complete revolution of the celestial sphere. Let us denote the angular velocity of this revolution by ω_s . Hence we can write: $\omega_s = -\omega_e$ where ω_e is the usual angular velocity of the Earth's daily rotation. But as we know this revolution is not perfectly inertial, an observer can verify this by using Foucault's pendulum for example. Therefore ω_s will mostly be not relative, or mostly apparent without any physical consequences, which means it wouldn't produce measurable effects. But W_e is absolutely inertial and can't be detected by any means, hence W_u is perfectly relative, and effects produced by W_u can be detected under suitable conditions.

To simplify we will consider only an observer at the equator, and for this particular case Eq.1 can be written for ERIR as :

$$W_e = \frac{Gm_e\omega_e}{c^2R_e} \tag{2}$$

And also for the global URR we can write :

$$W_u = -\frac{Gm_e\omega_e}{c^2R_e} \tag{3}$$

Since $v = \omega_e R_e$ where ω_e is the Earth's daily rotation angular velocity. Also since $R_g = \dfrac{2Gm_e}{c^2}$ where R_g is the Earth's gravitational radius. Eq.2 can be written as :

$$W_e = \frac{R_g}{2R_e}\omega_e \tag{4}$$

In this form our basic claim can be justified easily. Because R_g stands for the curvature of space-time, and R_e for the circular path due to Earth's rotation. Now for any object as R_g increases and the object's radius decreases so W will approach the angular velocity of rotation ω of the object. As in the case of neutron stars as we will see later $R_e \approx R_g$. And for black holes $R_e = R_g$. And therefore the global URR angular velocity will be exactly half that of the black hole's spin $W_b = \frac{1}{2}\omega_b$.

Substituting the values of the constants in Eq.2. For earth we get :

$W_e = 5.068 \times 10^{-14}$rad/sec , and the time period will be : $T_e = 1.239 \times 10^{14}$sec. And once again we remind that, the Universe will not take this time to complete one rotation. Instead as we scan the whole Universe with our daily rotation, we experience (Earth's resultant inertial rotation) ERIR here on Earth. And the ERIR produces the (Universe's relative revolution) URR for the Universe, and whenever we look at distant objects we can detect this rotation. But it is only a relative motion, and it happens immediately without any delay. And the process will be repeated again and again as Earth is spinning .

And as we will show in subsection.1.3 This Universal revolution is not restricted by the constancy of the speed of light. The tangential velocity of the distant object can take any value depending on its distance from Earth. If we denote the tangential velocity by $\mathbf{u}$ then we can write $\mathbf{u} = W_u d$. Where d is the distance from Earth to the object. And as an example for the distance of one mega-parsec $\mathbf{u} = -5.2c$ where c is the speed of light . We will neglect the minus sign in Eq.3 to simplify calculations. Actually it is a matter of choice and definition.

1.2 Aberration of cosmic objects light could reveal the rotation

Now consider if we have the above mentioned inertial rotation, and if Earth is at rest with respect to the Universe. In this case it will be impossible to detect this global URR. Because the tangential velocity of cosmic objects due to their relative revolution around Earth, will always be perpendicular to our line of sight, in addition to the absence of time dilation or transverse Doppler effect, as we will show in the following section.

Fortunately there are other relative motions. The Earth is orbiting the Sun, producing what is known as stellar aberration, and also the Sun is orbiting the center of the Galaxy, producing secular aberration .

Aberration will allow us to view distant objects through a slightly different angle. Therefore it wuold be possible for us to detect a component of the tangential velocity along our line of sight .

And this will be my second postulate. We note that this process also happens immediately without any delay .

1.3 Absence of time dilation, or transverse Doppler redshift

The above mentioned global (Universal relative revolution) is perfectly relative, and it is produced by our resultant perfectly inertial movement with the rotating

Earth, so one may expect to observe the reciprocal effects predicted by the special theory of relativity, as time dilation which can be manifested as transverse Doppler red-shift. But none is observed. And this is also being demonstrated by the astronomer Mike Hawkins from the royal observatory in Edinburgh after looking at nearly 900 quasars over periods of up to 28 years. And as for the claimed detection of time dilation in supernova case, one may simply argue that in the case of quasars the variations of light patterns occur at the surface of the quasar. Therefore perpendicular to our line of sight unaffected by the Doppler red-shift observed along our line of sight. But in the case of supernova we see variations along our line of sight, and hence we observe the red-shift, where a component of the tangential velocity in the direction of our line of sight can be observed. The red-shift in itself can give the illusion of time dilation.

Now again this relative Universal revolution is unrestrained by the constancy of the speed of light, dictated by the special theory of relativity. Faster than light motion is well proved observationally for distant galaxies and quasars. Quasars with red-shift $z \geqq 7$ already being observed. It is impossible to account for this very high red-shift without admitting that the object in question is moving faster than light. As we will see later this is only a tiny fraction of the corresponding tangential velocity.

So this will be my third postulate, that is the observed global URR is unrestricted by the time dilation or the constancy of the speed of light dictated by special relativity. But as usual if the relatively revolving object possesses an electrostatic charge then a magnetic field will be observed, following the rules for magnetic field production and reception.

1.4 Local gravitational rest frames

Originally the term local gravity frame is used in the context of the application of local inertial frames to small regions of a gravitational field. But here we will use the term for an object with a sufficient gravitational field to hold observers effectively on its surface.

Here we consider the case where a smaller object orbits a larger one. There are two cases. First when the smaller object have sufficient mass to hold observers effectively to its surface even when it is rotating, if so then the smaller object can be regarded as an independent local gravitational rest frame or LGRF for short. Hence for example the Earth's Moon can be regarded as a LGRF. The other case is that of an object which is incapable of holding observers to its surface, because its gravitational field is so week or negligibly small, and this is the case of spacecrafts. Hence this object wouldn't qualify to be a LGRF.

Now we add that, the spacecraft is in free fall state. Therefore an observer on-board it will claim to be in a frame free of gravity, also he will claim to be at rest.

Therefore we postulate that, an observer with insufficient mass to qualify as LGRF, orbiting around a LGRF, would observe the same global URR produced by the LGRF. In this case only we have to worry about the line of sight by which the orbiting object views the global URR. Because by changing the line of sight we change the value of the secular aberration angle. Therefore we change the value of the Hubble parameter, as we will see in section.3. about the Hubble phenomenon.

2 The Pioneer effect

2.1 The Pioneer acceleration or the photon acceleration

For relatively near objects, where the size of Earth's orbit around the Sun makes sense. In this case it is relevant to consider only the motion of the Earth around the sun. And therefore for objects like pioneer 10 and pioneer 11 spacecrafts, we will consider only the the motion of Earth around the sun. The maximum effect will occur when the Sun, Earth, and the craft are connected through a straight line and the craft is at the celestial equator, if equatorial coordinates are used. Also the station from which we observe the effect must be situated at the equator of Earth. These three conditions are essential for maximum aberration angle, if we considered the craft to be a source of electromagnetic radiation, in this case the telemetry signal emitted from the craft.

Now as in figure.1. situated at point E is an observer on Earth's equator . At point F is the spacecraft directly above the observer along the equator. Now the Earth is revolving around the Sun counterclockwise as viewed above the north pole with an average velocity $v = 29.78$ km/sec . Due to aberration resulted from Earth's movement. An observer at point E will see the craft at point G not F .

Now consider a telemetry photon of electromagnetic radiation emitted from the craft. And if the Earth is not spinning and not revolving around the Sun, an observer at point E will receive this signal without any change. But as we know the Earth is spinning. And according to the first postulate there must be a Universal relative revolution, or URR . In this case the URR will be clockwise viewed above the north pole, with magnitude given by Eq.4. This is a Universal revolution as observed by an observer at point E on Earth, and photons of light have to obey this as judged by this particular observer. The effect on photons will be maximum in the direction of the tangential velocity due to rotation, but in this case it will be impossible to observe. Aberration makes it possible to observe the beam of electromagnetic field, or its constituent photons through an angle as in Fig.1 the line GE now becomes the new path of radiation instead of the line FE. Treating the velocity of photons as a vector, we can decompose it into two components, the first one is in the direction of FE namely $c \cos a$ where c is the velocity of light and a is the aberration angle. This component will not be affected by the revolution. The second component is in the direction perpendicular to the first component, or is in the direction of the tangential velocity due to universal revolution. This component $c \sin a$ will be affected by the revolution. The photon for this component will be forced to participate in this Universal revolution around Earth, with an angular velocity W_u given by Eq.4. This will give the photon a centripetal acceleration towards the Earth's center as viewed by an observer on Earth as :

$$a_{ph} = W_u c \sin a \tag{5}$$

Where a_{ph} is the acceleration given to photons due to the Universal relative revolution. This acceleration will be given to the photon and will manifest as a blue-shift. Of course this a relative revolution, therefore it is only true for us on Earth, but it isn't real for the photons. Now since the only means by which we knew about the spacecraft's velocity state were the telemetry photons, it is impossible to tell if the effect is experienced by the craft or the signal's photons.

Also since the maximum value of $\sin a$ can be written as $\sin a = \frac{v}{c}$ where v is average speed of Earth's revolution around the Sun, as can be deduced from triangle EHG. Therefore Eq.4 can be written as :

$$a_{ph} = W_u v \tag{6}$$

Substituting the values of the constants and neglecting the minus sign in Eq.3 The maximum value of photons centripetal acceleration will be: $a_{ph} = 1.5 \times 10^{-9}$ m/s^2. For an observer on Earth.

2.2 The Hubble constant and the pioneer anomaly

Equation (5) can be written as:

$$a_{ph} = [W_u \sin a]c \tag{7}$$

Where $\sin a = \frac{v}{c} \approx 9.93 \times 10^{-5}$

The numerical value of the quantity [$W_u \sin a$] is $5.035 \times 10^{-18} s^{-1}$. Which is very near to the value of the Hubble constant. But we will clarify this in the next section about the Hubble phenomenon.

2.3 The annual and diurnal variations of the effect

Eq.7 gives the maximum value of the acceleration. The effect depends on the sine function of the aberration angle a . Hence the diurnal aberration due to Earth's rotation will add to the effect and subtract from it periodically. This can be achieved by simply adding the tangential velocity of the equatorial observer due to Earth's rotation to the Earth's orbital velocity.

There will also be an annual variation, because the maximum value of the effect will be obtained when the Earth, Sun, and the craft, are connected by a straight line. But as the position of the craft with respect to the Sun is not changing. But the Earth's position is changing along its orbit. There will be two points where the effect will be maximum, and two points where the effect is minimum. As in Fig.2 at the points E2 and E4 the effect will be maximum, because the value of $\sin a$ will be maximum. And at points E1 and E3 will be minimum.

Figure 1: The figure is not drawn to scale. We exaggerated the angle of aberration a for explanation sake. For a maximum effect on photons the spacecraft is assumed to be at point F , observed by an observer at the equator at point E . The line EF is perpendicular to both the Earth's axis of rotation and the direction of the velocity vector of the Earth's revolution around Sun. Due to aberration the spacecraft will be seen at point G . The line GE represents the velocity vector of the signal. This vector can be decomposed into two components. The first in the directionFE which is not affected by the global relative revolution. The other component is in the direction of the tangential velocity u . This component will be affected as judged by us on Earth. And the photons centripetal acceleration can be found by multiplying this component by the angular velocity of the global URR or $a_{ph} = W_u \times c \times \sin a$.

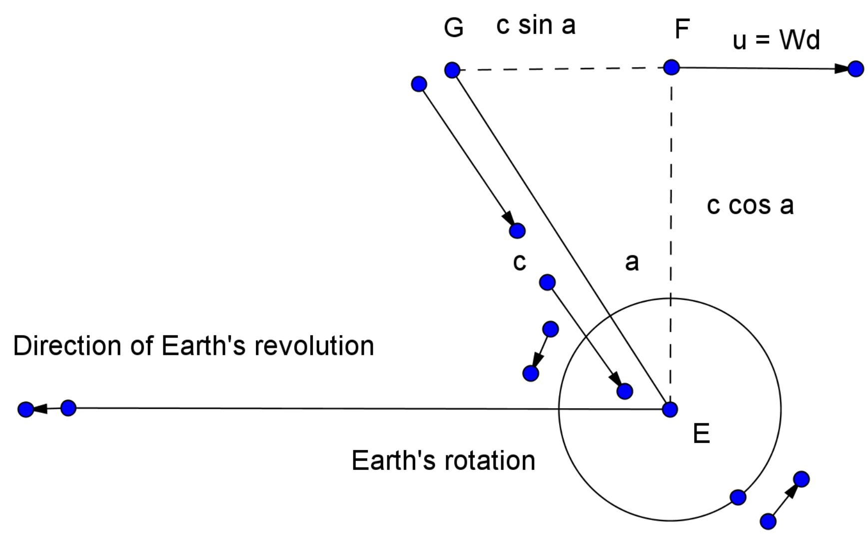
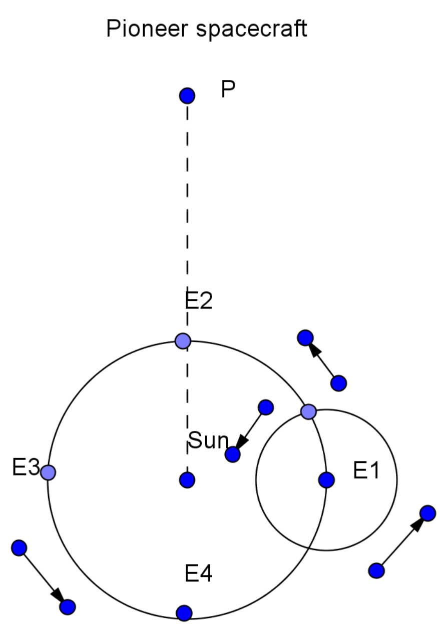


Figure 2: The figure is not drawn to scale. An observer is on Earth which is revolving around the Sun. The pioneer spacecraft is at point P . Its position is fixed with respect to the Sun. The maximum effect will be at points E2 and E4. Because the value of $\sin a$ will be maximum corresponding to maximum aberration angle. And at points E1 and E3 will be minimum as expected for an effect which is dependent on aberration to be observed.



3 The Hubble phenomenon

For very distant objects, a mega-parsec or more away from us, the orbit of Earth around the Sun dwarfs to zero, and we can think of Earth to a very good approximation to be coinciding with the sun. In this case we have to consider only the motion of the Sun as the aberrational angular change generator. While the Earth by its ERIR is generating the global URR discussed in the introduction section.

Now given URR and for very distant objects, like galaxies studied by the American astronomer Edwin Hubble, and also given the solar system's movement with the Sun as the source of secular aberration, we will be in a position to interpret the red-shift of distant galaxies observed by the great astronomer Edwin Hubble in a totally different manner as we will show.

Here and to clarify and concentrate on the concept only, so that the results can be generalized for any other case, we will consider an ideal case. First the Earth will be taken as a perfect sphere, and the path of the Sun as in Fig.3 will be taken as a straight line in the direction perpendicular to the line joining the Sun to the center of the Galaxy. The sun moves along its ecliptic plane as usual around the Galactic center. We will ignore the tilt of the ecliptic plane with respect to Galactic disc plane. And also we will ignore the Earth's axis of rotation tilt to the ecliptic plane. So as in Fig.3 the Earth is at point E assumed to be practically merged with the Sun. This is due to vast distances involved. The orbit of the Earth can be assumed to dwarf to zero. Here we view Earth above its north pole, and hence Earth will be rotating around its own axis in a counterclockwise manner. This counterclockwise rotation will generate the ERIR described in the introduction. And according to the first postulate, the value the angular velocity due to this rotation is given by Eq.1. And since we concentrate here only on equatorial observers, we will use Eq.2 or $W_e = \dfrac{Gm_e\omega_e}{c^2R_e}$. As discussed before this is being absolutely inertial movement, an observer will not sense it, instead he can detect it in distant objects, and will see that the whole Universe is revolving in the opposite sense, or clockwise as observed above the north pole with the angular velocity $W_u = -W_e$. And due to this relative revolution distant objects will possess a tangential velocity. If we imagined a huge circle centered on Earth, with the cosmic object moving along the circumference of this circle, then according to circular movement theory the value of this tangential velocity will be given as: $\mathbf{u} = W_u d$. Where $\mathbf{u}$ is the tangential velocity and d is the distance from Earth's center to the cosmic object. As in figure.3. the sun orbits the center of the Galaxy in a clockwise manner. Hence as in the figure the Sun with Earth moves to the right. And for reasons to be explained later we denote this velocity by $v_\odot$. Which is the peculiar velocity of the Sun with respect to the local standard of rest. Also from Fig.3 at point b_1 is a cosmic object as a source of light and let it be a galaxy, it lies along the equator if we use equatorial coordinates. The line joining Earth to this object is perpendicular to both the Earth's axis of rotation and the solar velocity vector's direction.

Now in the absence of the solar movement it will be impossible to detect this relative revolution. Because this revolution is not restricted by the speed of light limit, and the tangential velocity can have any value. To give an example at a distance of only one mega-parsec, the tangential velocity will be about five times the speed of light. Being unrestrained by the special relativity means that there will be no transverse Doppler red-shift, and it means the absence of time dilation. Therefore it is impossible to detect this global URR if the Sun is at rest. But as in figure.3. and due to solar system's movement there will be an aberration of the object's light. The observer at point E will see the object at point b_2 instead of point b_1 . And according to the second postulate, aberration will allow an observer to detect a component of the tangential velocity along the line of sight. Here the angle a is the usual angle of aberration. The line cb_1 is perpendicular to the line of sight. The line db_2 is an extension of the line of sight. And the line eb_2 represents the tangential velocity due to Universe's relative revolution URR in its original direction as that at point b_1. It is clear that the angle $cb_2e = Eb_2f$ is the angle of aberration a . See Fig.3.

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The Hubble's red-shift

Now using the angle cb_2e we are in a position to find the two components of the tangential velocity $\mathbf{u}$ along the line of sight and perpendicular to it. Clearly the component perpendicular to our line of sight will not be observed, and we can observe only the component along our line of sight. Now from Fig.3 the component of $\mathbf{u}$ perpendicular to the line of sight can be given as: $v_p = u \cos a$ this component will go unnoticed, and the component along the line of sight will be:

$$v = \mathbf{u} \sin a \tag{8}$$

But since $\mathbf{u} = W_u d$ we can write: $v = W_u d \sin a$ or:

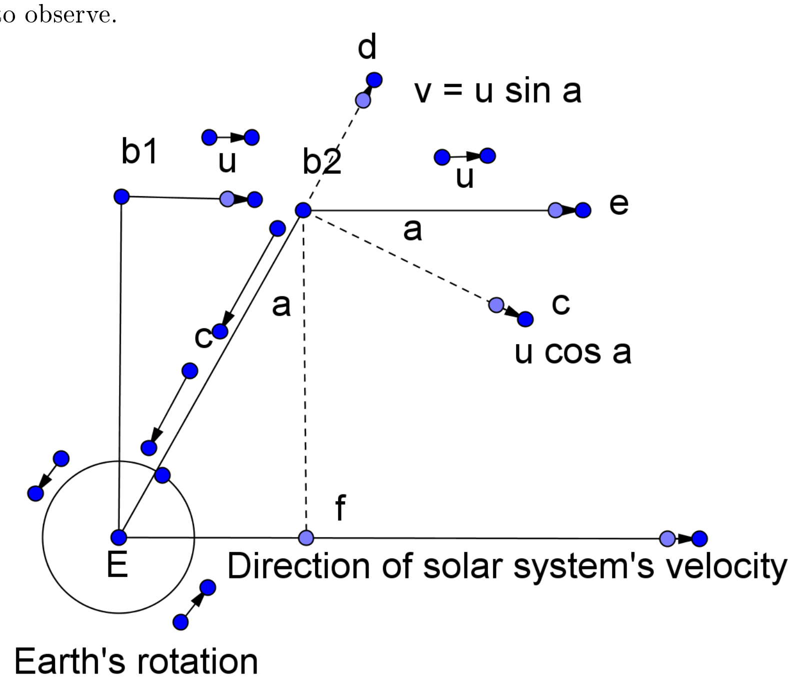
$$v = [W_u \sin a]d \tag{9}$$

Comparing Eq.9 with the Hubble's law $v = H_0 d$ we can write:

$$H_0 = W_u \sin a \tag{10}$$

Therefore we conclude from Eq.10 that the Hubble constant is not a real constant. It depends on the aberration angle. And hence its value is dependent on which direction we chose. The Hubble parameter has a maximum value corresponding to the maximum value of $\sin a$, and a minimum value for the minimum value of $\sin a$. This dependence of the Hubble parameter on direction may explain the conflicting values calculated for it by different investigators. Also it may explain the conflicting values obtained by the Hubble Space Telescope, the WMAP craft and the Planck craft, each one of them observed the effect from a different line of sight. It is clear from Eq.9 that an observer will see the distant

Figure 3: The figure is not drawn to scale. The aberration angle is exaggerated for explanation sake. At point E is an observer on Earth's surface along its equator. And at point b_1 is a cosmic object at distance d from Earth's center. But due to aberration generated by the solar system's movement, the object will be seen at point b_2. The angle a is the angle of aberration. The Earth is spinning counterclockwise as seen above the north pole. Therefore the angular velocity of the global URR or W_u will be in a clockwise manner. The tangential velocity due to global URR is given as : $u = W_u d$. What we observe is the component of u along our line of sight, or $v = u \sin a$. The other component or $\bar{v} = u \cos a$ is perpendicular to our line of sight. This component will be impossible to observe.



object moving away from him along his line of sight. With a velocity directly proportional to the distance from Earth.

From Fig.3 using the triangle Eb_2f we can write: $\sin a = \frac{v_{\odot}}{c}$. So Eq.10. can be rewritten as:

$$H_0 = \frac{Gm_e\omega_e v_{\odot}}{c^3 R_e} \tag{11}$$

Now we neglect the minus sign in Eq.3 for W_u, and all the terms have their above described meanings. This equation gives the maximum value of the Hubble parameter. And if we know for sure the value of the solar system's velocity and its direction, It would be possible to find the maximum value of the Hubble parameter, and the direction to look for the corresponding object with the maximum value. And also if we know the maximum value of the Hubble parameter, it would be possible to find the correct value of the solar system's velocity.

Now let us assume that the maximum value of the Hubble parameter is 70 km/sec/mega-parsec, and solving Eq.11 for $v_{\odot}$ we can write:

$$v_{\odot} = \frac{H_0 c^3 R_e}{Gm_e\omega_e} \tag{12}$$

Substituting the value of H_0 and other constants we get: $v_{\odot} = 13.418 km/sec$. Remarkably agreeing with the value obtained by Walter Dehnen and James j. Binney (1998) using Hipparcos data, for the peculiar velocity of the Sun with respect to the local standard of rest.

The Hubble's blue-shift

If equatorial coordinates used, it is very easy to show that the plane made by the Earth's axis of rotation and the line representing the direction of the solar system's velocity vector, this plane divides the universe into two equal hemispheres. The first one which is away from the Galactic center and the galactic disc, is red-shifted. The other in the direction of the center of the Galaxy towards the galactic disc, will be blue-shifted, by the same logic used above to show the red-shift. This is because for the hemisphere in the direction of the Galactic disc, the Universal tangential velocity will be opposite to that of the other hemisphere. Therefore the direction of the component of the tangential velocity along the line of sight will be towards the observer, and the cosmic object will appear to be moving towards us. And hence a blue-shift will be observed. See Fig.4.

Now we may argue that due to the inclination of the solar system's disc by 60° to the galactic disc, and the inclination of the Earth's axis of rotation by 23.4° to the ecliptic, the majority of blue-shifted galaxies with great blue-shift would lie behind the zone of avoidance, and therefore go unnoticed. But one can see galaxies with relatively low blue-shift. Distributed near the north and south Galactic poles nearly 180 degrees apart, where the interference with the Galactic disc dust and stars light is minimum, the majority of blue-shifted galaxies could be observed towards the north equatorial pole. And note that to give a more accurate picture we must consider the angular tilt of the ecliptic plane with the Galactic disc. And the tilt of Earth's axis of rotation to the ecliptic.

Also the puzzle of the Virgo super-cluster. And what is known as the local velocity anomaly, can be solved with ease. Actually there is no real movement. The Virgo cluster lie near the north galactic pole where the Hubble parameter becomes highly unstable, due simply to its dependence on the aberration angle. The value of the sine function will become small as we look towards the north equatorial pole. And may even be zero at exactly the north pole. In fact part of the Virgo cluster galaxies located at the the blue-shifted hemisphere, while the rest lie at the red-shifted zone. Nothing is moving towards us or away from us, it is an illusion. This is also true for what is known as the great attractor. All this confusion is due to our confidence in the constancy of the Hubble parameter. And our confidence in the meaning we assigned to it. So we can see clearly that the Universe is not expanding after all, and if it is not expanding it is surely not accelerating.

The Hubble's parameter for the Sun and other planets

Now from the above discussion. We conclude that the value of the Hubble parameter is not universal, it depends on the mass, rotation period, and the radius of the corresponding spherical mass. And in our own solar system the value of the parameter will vary for different planets and planetary moons. To give an example the global URR for our Moon is : $W_{um} = 8.3668 \times 10^{-17}$rad/sec. Where W_{um} is the angular velocity of the Universal revolution with respect to the Moon. And for very distant observed cosmic objects, we can assume the distance between the Moon and the Sun to dwarf to zero, and hence as for the Earth the maximum value for $\sin a$ must be the same for all the solar system's planets, planetary moons, and the Sun itself. And so we will use the value of the peculiar velocity of the Sun with respect to the local standard of rest obtained by Dehnen & Binney or: $v_\odot = 13.4$ km/sec to calculate the Hubble parameter for the object in question. Note that we ignored the tilt of the respective planet or moon with respect to the ecliptic plane. This tilt is essential for the correct value of the Hubble parameter.

Now for the solar system including the Moon $\sin a = 4.47 \times 10^{-5}$. Therefore the Hubble constant for an observer on Moon will be:

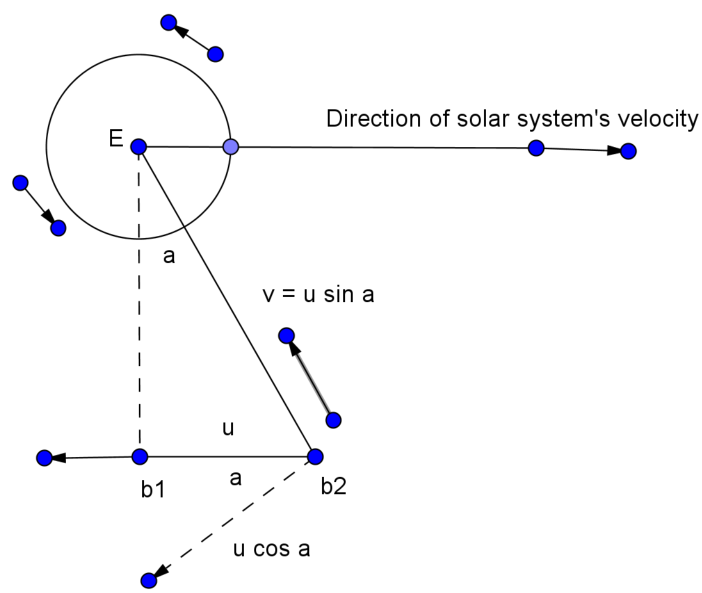
$$H_m = 3.74 \times 10^{-21} rad/sec \tag{13}$$

This means that the red-shift or blue-shift measured on Moon will be less by about 606 times than that measured on Earth.

In general and to calculate the value of URR we can rearrange Eq.3 and neglecting the minus sign to get :

$$W = \frac{2\pi G}{c^2} \times \frac{m}{RT} \tag{14}$$

Figure 4: The figure is not drawn to scale. We exaggerated the aberration angle a for explanation sake. The observed cosmic object is at point $b_1$at a distance d from an observer at E along Earth's equator. The line Eb_1 is perpendicular to both Earth's axis of rotation and the line representing the Sun's velocity vector. And b_2 is where we see the object due to aberration effect. The line Eb_2 is the line of sight. The angle $b_1Eb_2 = a$ is the angle of aberration. Earth is viewed here above its north pole, therefore spinning counterclockwise as indicated by arrows. The Universe will be revolving relatively with the angular velocity W_u clockwise. The Sun is moving with its peculiar velocity also clockwise. The object at b_1 will have a tangential velocity $u = W_u d$. An observer at E will see a component of u along his line of sight, or $v = u \sin a$. As in figure the direction of the velocity v is towards the observer, therefore a blue-shift will be observed. The component perpendicular to line of sight or $v_p = u \cos a$ will not be observed.



Now the constant $\frac{2\pi G}{c^2}$ is the same for all cosmic objects from asteroids to neutron stars. Where T is periodic time of revolution.

For the planet Jupiter the Hubble parameter will be:

$$H_j = 1.569 \times 10^{-15} rad/sec \tag{15}$$

And it means that the red-shift or blue-shift on Jupiter is 693 times greater than that on Earth for the same observed cosmic object.

Below is a table to show the Hubble parameter as will be measured on the surface of the sun and the rest of the solar system's planets, with the exception of planet Uranus due to its unusual mode of rotation. And as for the planet Venus the effect will be reversed, one would observe a blue-shift for the same objects we on Earth claimed to be red-shifted. This is because the planet Venus rotates in a retrograde manner compared to Earth.

Table 1: The value of the respective planet RIR angular velocity and the Hubble parameter of the Sun and the planets of the solar system except Earth. For planet Uranus only the Uranus's RIR angular velocity is calculated, this is due to its peculiar mode of rotation. W is measured in radian per second. The values for the Earth are : $W_e = 5.068 \times 10^{-14} rad/sec$ and $H_o = 2.265 \times 10^{-18} rad/sec$. Here we used e in place of the base 10 to save space in the table.

	Sun	Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune
W	$6.1e^{-12}$	$1.2e^{-16}$	$1.8e^{-16}$	$9.9e^{-15}$	$3.5e^{-12}$	$1.2e^{-12}$	$2e^{-13}$	$3.3e^{-13}$
H	$2.7e^{-16}$	$5.6e^{-21}$	$7.9e^{-21}$	$4.4e^{-19}$	$1.5e^{-16}$	$5.2e^{-17}$	—	$1.5e^{-17}$

The Hubble parameter for the neutron star

As usual neutron stars represents the extreme in all respects. Neutron star have the minimum radius, shortest periodic time of rotation, and the maximum mass with the exception of the black hole. So the value of the global URR must be the fastest. And the corresponding Hubble's parameter must be the largest. Using Eq.14 let us choose a neutron star of radius 20km and periodic time of rotation as one second and mass 1.4 times the solar mass, this will give:

$$W_n = 0.6496\, rad/sec$$

Compared to the assumed star's rotation period or ω_n it is really fast. Now to calculate the Hubble parameter we need to know exactly the peculiar velocity by which the star is moving with respect to its local standard of rest. This motion will allow an observer to view the relatively revolving Universe through an angle, and hence can observe a component of the tangential velocity along his line of sight. Using the same velocity of our Sun just for comparison sake we get:

$$H_n = 2.9 \times 10^{-5} rad/sec$$

Comparing the RIR of the neutron star to that of Earth we get:

$$\frac{W_n}{W_e} = 1.28 \times 10^{13}$$

Note the similarity between this number and the ratio of the neutron star's magnetic field compared to that of Earth, obtained from observations.

4 CMB anomalies

There were many cosmic microwave background surveys, but the most accurate began with COBE (the Cosmic Background Explorer), then WMAP (Wilkinson Microwave Anisotropy Probe), and finally concluded with the extremely accurate Planck's survey. The WMAP revealed anomalies, which later confirmed by the most accurate Planck spacecraft. These anomalies include the axis of evil where the axes of the dipole, quadrupole, and the octopole align with each other and with the ecliptic. Now given the global URR, and the movement of the Sun to allow us to detect this rotation, we argue that the dipole is produced by the microwaves which were either produced by distant cosmic objects. Or being absorbed and re-emitted by distant cosmic objects or their respective clouds and dust. If so then the microwaves will be subjected to the same red-shift on one side of the sky, and a blue-shift on the opposite side of the the sky. The effect depends as discussed above on the direction of the source of the radiation which gives the value of the aberration angle. The maximum value of the red-shift or blue-shift would correspond to the maximum value of the aberration angle, and this in turn correspond to the maximum value of the Hubble parameter. Therefore we can conclude that the CMB dipole has nothing to do with real motion, and there is no need to assume the presence of the great attractor to justify this effect.

And as for the quadrupole, octopole, and generally multipoles one can see clearly that they are generated by the movement of the Earth around the sun. Because the Earth's revolution around the sun generates what is known as stellar aberration. Because this effect is relevant only for microwaves produced by relatively near objects for which the orbit of the Earth around the Sun makes sense, this is the reason of the low power of the effect. As the Earth is moving, there will always be a dipole. This dipole can be obtained following the same rules which we discussed above in the Hubble phenomenon. Now the coincidence of all these effects with the ecliptic or the equinox comes naturally, and the axis of evil will not be so evil after all, and the Earth is not the center of the universe.

5 Magnetic field generation by spinning cosmic objects

Production of magnetic fields by rotating objects, like planets, stars, galaxies, accretion discs, and even asteroids, are till now not completely understood. But given the above mentioned spin generated relative global revolution, we can give some outlines and hints as to how to construct a plausible and more reliable and general theory. Because the final solution needs advanced mathematical treatment, which I admit can't offer, so this will be an invitation for other investigators to expand these ideas to create a functional theory. So in the following subsections we will give the basic ideas to be discussed. There is no claim that all these ideas are correct.

5.1 Protons outnumber electrons in deep space

This is deduced from a large body of data about cosmic rays, that more than 90% of cosmic rays are protons. So we can assume that in deep space protons outnumber electrons, hence there will be a resultant positive charge in deep space, although the Universe as a whole is neutral. If we combine this assumption with the above discussed global URR. Then for an observer on a spinning object with a resultant positive charge at a distance d from the object's center. Magnetic field will be generated immediately. But the generated field traveling with the speed of light needs time $t = cd$ to arrive and be detected by the observer. After this time if the object is orbiting a common barycenter. It will receive the field at a different location with respect to the barycentric rest frame. The produced field is similar to that at the center of a solenoid, it is not a dipole field. Hence we argue that the fields of planets and moons rich with ferromagnetic materials can act as an electromagnet with ferromagnetic core, and therefore giving a deceiving dipole field near the surface. But far away from the object's surface the true field will be observed. The huge magnetic field surrounding planets or stars and could be detected far away from them, is due to this solenoid like generation of the field.

5.2 The effective charge and the critical distance

The effective charge is the resultant positive charge distributed on the surface of the sphere of radius d , which is responsible for the object's observed field, where d is the distance from the object to this sphere. To clarify, consider a net positive charge distributed evenly in space, now imagine huge spheres centered on the planet. Because the charge is distributed evenly, then the quantity of charge Q increases as the radius d increases, because the surface area of the sphere is proportional to the radius d . Therefore for a certain value of d the field will be maximum, this maximum field is produced by the effective charge, and the distance will be the critical distance, and by increasing the distance further the field will decrease.

5.3 The barycenter as a reference point

Considering a large number of cases, something is not clear and even mysterious about the magnetic fields of small objects orbiting a common barycenter, which is shared with a larger object. When the field viewed from the local gravitational rest frame of the larger object (LGRF), all the Galilean moons showed a changing magnetic fields. For Europa, Callisto, and Ganymede we assumed a salty ocean, which is strange for those remote and tiny worlds to maintain sufficient heat for the salty water to be still in a liquid state. For Io we assumed the lava ocean, and for Saturn's moon Titan we assumed an electrically conducting atmosphere. Adding to this the mysterious solar cycle and the solar magnetic flip every eleven years, and also the reversal of the Earth's magnetic field. All these mysterious observations can be accounted for if we assumed that, for an observer at the barycenter, the spin of the smaller object is changing continuously as the smaller object orbits the common barycenter. This change of spin will be claimed by an observer in the LGRF of the larger object. Although the spin orientation with respect to distant stars will not change due to gyroscope effect. So we need to hypothesize that, we have to take the barycentric observer's point of view about the orientation of the spin of an object orbiting it. So if the small object like a moon orbiting around a common barycenter shared with the massive planet, we can assume approximately that this barycenter is nearly coinciding with the center of the planet. Now an observer in the LGRF of the planet can be approximately considered a barycentric observer. For this observer the spin orientation of the small object, will be changing continuously according to our assumption. If this moon or small object possesses a magnetic field then the field will be changing periodically corresponding to the change of spin . But for another observer in the LGRF of the moon the field will be stable without any change. This may explain the changing field of the Sun, if we assumed that the Sun as viewed from Earth, is orbiting the solar system's barycenter completing one revolution in about 22 years. Then as observers on Earth, we observe this revolution exactly as observed by an observer at the solar system's barycenter, because we orbit the barycenter not the Sun. If so then the orientation of the solar spin will be viewed by us to be changing. Hence the magnetic field of the sun will be changing for us.

Also if a planet due to its global URR generates a magnetic field, when it is at a certain point with respect to the solar system's barycenter, and received the field at another point after time $t = cd$. Then the received field's axis will be tilted, in correspondence with the angle traveled with respect to the barycenter, if we assumed the orbit to be a circle. This way we can determine the distance to the effective charge producing the field. For inner planets, this method will not work if the distance is many years, because the planet may perform many revolution around the barycenter before receiving the field. So we will consider only the outer planets Saturn, Uranus, and Neptune. We can make a rough estimation using these two simple laws. Obtained for an oversimplified circular orbit:

$$\theta = \phi + (n \times 360^\circ)$$

Where θ is the actual angle by which the magnetic field tilted with respect to the object's rotation axis. This angle reveals the true distance to the effective charges, and ϕ is the apparent or the observed angular tilt. And $n = 0, 1, 2, 3, ..., ...,$. The number n determines the the number of complete revolutions of the respective planet around the Sun before receiving the field. Note that there is only one incomplete revolution, And this incomplete one gives the observed angular tilt or ϕ.

From this equation one can write:

$$d = T \times \frac{\theta}{360}$$

Where d is the distance to the effective charge, and T is the time required for the planet to complete one revolution around the Sun in years. Now for Saturn we can conclude that the planet produced the field and received it after completing one revolution around the solar system's barycenter. Or $n = 1$ and $\phi = 0$. This is deduced from the highly axisymmetric field of Saturn. Hence the distance from Saturn to the effective charge is $d = 29.457\, light\, years$. Now we can test this assumption by applying this rule to planet Uranus. For Uranus $\phi = 120^\circ$ and $n = 0$. Therefore $d = 84 \times \frac{120}{360} = 28\, light\, years$. This number is very near to that of Saturn. But the actual orbit of Uranus is elliptical and not circular. For Neptune we get $d = 165 \times \frac{47}{360} = 21.5\, light\, years$. Which is not very far from the result obtained for Saturn, given the highly elliptical orbit of Neptune.

Now for the Earth's field to flip the distance to the effective charge needs only be half a year away or near to us.

5.4 Rough comparison between small objects fields

The magnetic field produced by this mechanism is highly complicated, because the final field is produced by all observers on the surface of the respective cosmic object, and relatively rotating charges on spherical shells. Therefore an advanced mathematical treatment is needed to give the final shape of the magnetosphere of the respective object. Here we will concentrate on relatively simple objects, like dwarf planets and planetary moons. We claim that for those simple objects the field is proportional to the global URR. This deduced from the simple law of the current loop. Hence by using this argument we compare the magnetic fields of some of the dwarf planets and planetary moons, by comparing their respective global URR . Note that this way we compare the magnetic field strength at the centers of these objects, we don't compare there magnetospheres. We consider here the URR of planet Mercury to be the unity. Because the magnetic field of planet Mercury is well known.

As in Table.2 Jupiter's moon Io magnetic field is 12.4 times as the magnetic field of planet Mercury, and the dwarf planet Haumea is 11.2 times, and Makemake about 8.3 times, and Ganymede about 3.5 , Ceres 2.4 , 4 Vesta 1.97 , Titan 1.47 .

Table 2: If it's correct to compare the magnetic fields of small objects, by comparing their respective URRs. Then this table is showing that the dwarf planet Haumea's magnetic field is about 11 times stronger than that of planet Mercury. Ceres is about 2 times. Makemake 8 times. Asteroid 4 Vesta nearly 2 times. Ganymede 3.5 times. Io more than 12. Titan about 1.5 times. The Moon magnetic field is about 0.7 of that of Mercury, but the high amount of iron in Mercury may account for its relatively strong field, Mercury acts as an electromagnet with an iron core, therefore amplifying the field and acts deceptively as a dipole.

Name	Haumea	Ceres	Makemake	4 Vesta	Ganymede	Io	Titan	Moon
$\frac{W}{W_{uMer}}$	11.2	2.4	8.3	1.97	3.5	12.4	1.47	0.697