On a Global Relative Rotation of the Universe Around Earth Induced by it's 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 around it's own axis, my aim is to find a "resultant inertial rotation", (resulting from the curved path due to gravity, and the circular path of an observer due to rotation) out of the whole rotation, that is to claim that if the curvature of the observer's circular path is same as the curvature produced by gravity the motion will be perfectly inertial, otherwise there will be a resultant inertial motion, and for this "resultant inertial rotation" , an observer can assume the state of rest, while the whole observable Universe will be rotating relatively in the opposite direction, this relative Universal rotation will be displayed, in conformity with circular motion laws. I was able to find an equation to describe this type of rotation, and for very distant objects, where Earth's orbit around the Sun, dwarf's to zero, so using this equation, and assuming that the secular aberration of light of distant cosmic objects, due to Sun's movement with it's peculiar velocity, around the Galactic center, we assumed that aberration will allow us to observe a component of the tangential velocity due to this Universal rotation, along our line of sight.

It will be possible for us, to explain the Hubble phenomenon, and predict a blue-shift, on the other side of the sky, mostly behind the zone of avoidance, hence we predict two points one with maximum red-shift and the other opposite to it with maximum blue-shift, these two points will coincide with the CMB dipole, also we can show that the Hubble constant is not a constant and it's value depends on the aberration angle, therefore we can prove that the great attractor, the Virgo in-fall, the CMB dipole, the dark energy, and the fingers of God theories and the likes are based on illusions, all the CMB anomalies detected by WMAP, and Planck spacecrafts, can be explained with ease, and the pioneer effect can also be explained, and the diurnal and annual variations of the effects can be accounted for naturally due to the dependence of the effect on the aberration angle, but in the case of the pioneer spacecrafts, we have to

consider Earth's revolution around the Sun, as the aberration generator, as well as the daily Earth's rotation as the source of diurnal aberration, as we will show. Also it is possible (using this rotation) 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 simply assuming an excess in the positive charge, due to protons, over the negative one, in deep space, therefore we will have a solenoid mechanism for magnetic field generation, but we will give only the outlines so other investigators can develop it further.

1 Introduction

1.1 The resultant inertial rotation

As mentioned in the abstract, 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 moving in the opposite direction, an observer can even verify his claim by conducting experiments within his frame. Inertial motion, according to Newton's mechanics, is the motion in straight line with a uniform velocity, which is equivalent to the state of rest.

Now my quest is to find a similar situation for an observer on the surface of a rotating spherical object with a certain mass, and let this object be our planet Earth, we assume it to be a perfect sphere, with all the well known parameters of the Earth. 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-time, and also rotation results in a curved circular path, so for a very brief instant of time, no matter how small, the two curvatures can give rise to perfectly inertial motion, this condition will be broken and then repeated again, of a complete one rotation, there will be a resultant inertial rotation with an angular velocity which we denote by W .

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

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

Where k is the constant of proportionality, and by substituting 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:

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

Equation (1) will be my first postulate, the validity of this equation, can be tested, by the correctness or otherwise, of the predictions, made using it. This angular velocity have to be interpreted as the angular velocity of the "Resultant Inertial Rotation" or "RIR" for short, resulting from the curvature due to gravity and the circular path due to rotation, and it will be impossible for an observer, to detect this rotation, the observer can assume the absolute state of rest, and only by observing distant objects gravitationally unbound to Earth, one can see the "Resultant Relative Rotation" or "RRR" for short. So by observing distant objects the effects produced by this rotation are equivalent to the effects produced if the Universe as a whole is rotating by this angular velocity with respect to the stationary Earth, it is a resultant angular velocity, Earth completes one rotation in one sidereal day, during this day the effects observed by an observer at any latitudinal circle are equivalent to rotating the whole Universe by this angular velocity, the direction of this angular velocity is opposite to that of Earth, if Earth is rotating counterclockwise viewed above the north pole, then the "RRR" will be clockwise, as viewed from the same location.

To simplify we will consider only an observer at the equator, and for this particular case and equation (1) can be written as :

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

since $v = \omega_e R_e$ where ω_e is the Earth's rotation angular velocity, also since $R_g = \frac{Gm_e}{c^2}$ where R_g is the Earth's gravitational radius, equation (2) can be written as :

$$W = \frac{R_g}{R_e}\omega_e \tag{3}$$

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 discuss later $R_e \approx R_g$, and for black holes $R_e = R_g$ and therefore the "RRR" angular velocity will be exactly the same as that of the black hole spin, which is agreeing with our claim where the curvature of the path traveled by an observer due to circular movement is same as the curvature produced by gravity.

substituting the values of the constants in equation (2) for Earth we get :

$W = 5.068 \times 10^{-14}$rad/sec , and the time period will be : $T = 1.239 \times 10^{14}$sec, and once again we need to make clear that, the Universe will not take this time to complete one rotation, instead, as we scan the Universe with our daily rotation, we experience a "resultant inertial rotation" which produces the "resultant relative rotation" for the universe as a whole, and whenever we look at

distant objects we can detect this rotation, by the effects it produces in distant objects, if certain conditions are fulfilled, but it is only a relative motion, it happens instantaneously, without any delay, and the process will be repeated, again and again, as the Earth is spinning .

One more thing to be added here, this Universal relative rotation is not restricted by the constancy of the speed of light, the tangential velocity of the distant object can take any value depending on it's distance from earth, if we denote the tangential velocity by $\mathbf{u}$ then using the circular motion theory, we can write $\mathbf{u} = Wd$ where d is distance from Earth to the object, and as an example, for the distance of only one mega-parsec, $\mathbf{u} = 5.2c$ where c is speed of light, this condition will be discussed in detail and will be raised to the status of a postulate as we will show.

1.2 Aberration of cosmic objects light can reveal the rotation

Now if we have the above mentioned rotation, with the Earth at rest, with respect to the Universe, it will be impossible to detect this rotation, simply because the tangential velocity will always be perpendicular to our line of sight, with 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, 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 will 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 aberration phenomenon, also happens immediately without any delay .

1.3 Absence of time dilation, or transverse Doppler red-shift

The above mentioned rotation is perfectly relative, and 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, as 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. 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 rotation is unrestrained by the constancy of the speed of light, which 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 tangential velocity.

So this will be my third postulate, that the observed resultant relative rotation is unrestricted by the time dilation or the constancy of the speed of light dictated by special relativity, but as usual if the rotating object possesses an electric charge then a magnetic field will be generated due to this relative rotation.

2 The Pioneer effect

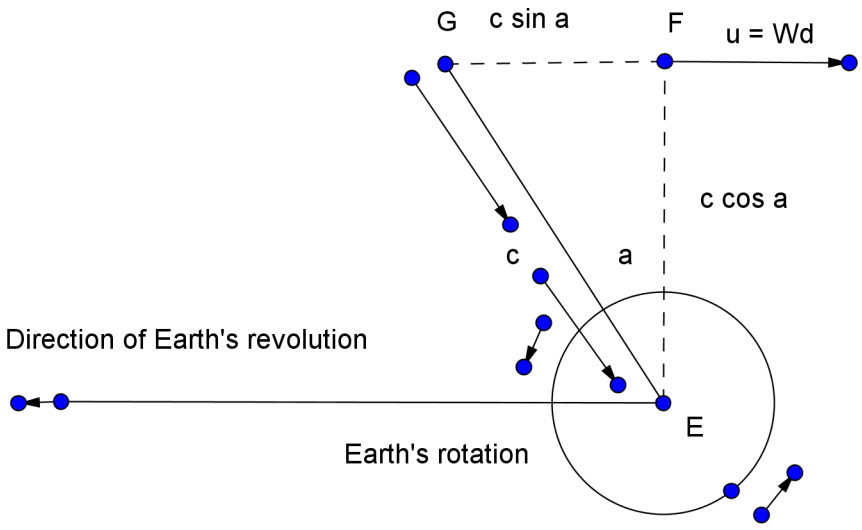
2.1 The Pioneer acceleration

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 and earth and the craft are connected through a straight line, and the craft is at the equator, also the deep space network station from which we observe the effect must be situated at the equator, if the equatorial coordinates is used, these three conditions are essential for maximum aberration angle, if we consider the craft to be a source of electromagnetic radiation,(the signal emitted from the craft in this case).

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 the north pole, with the 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 resultant relative rotation, or RRR for short, in this case it will be clockwise viewed above the north pole, with magnitude given by equation (1) , this is a Universal rotation as observed by an observer at point E and photons of light, have to obey this, 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 make it possible to observe the beam of electromagnetic field, or it's constituent photons through an angle as in figure

Figure 1: The figure is not drawn to scale, we exaggerated the angle of aberration a for the sake of explanation, for the maximum acceleration the spacecraft assumed to be at point F observed by an observer at the Earth's equator at point E where the line EF is perpendicular to both 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 and the line GE represents the velocity of light vector which can be decomposed into two components one in the direction FE which is not affected by the relative global rotation of the Universe, but the other component in the direction of the tangential velocity u will be affected, and the acceleration can be obtained by multiplying this component by the angular velocity of the relative global rotation or $a_p = W \times c \sin a$.



(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, one 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 rotation, the other component is in the direction perpendicular to it and is same as that of the tangential velocity due to Universal rotation, or $c\sin a$, this component will be affected by the rotation, the photon for this component as we view it, will be forced to have an additional rotation with an angular velocity given by equation (1) , this will give the photon a centripetal acceleration towards Earth as viewed by an observer on Earth as :

$$a_p = Wc\sin a \tag{4}$$

where a_p is the acceleration given to photons due to the universal rotation, this acceleration will be given to the photon, and will manifest as a blue-shift, because the speed of light is constant.

Also since the maximum value of $\sin a$ can be written as $\sin a = \dfrac{v}{c}$ where v is average speed of Earth's revolution around the Sun, we can deduce this from triangle EFG, therefore equation (4) can be written as :

$$a_p = Wv \tag{5}$$

Substituting the values of the constants, the maximum value of photons centripetal acceleration will be: $a_p = 1.5 \times 10^{-9}\ m/s^2$.

2.2 The Hubble constant and the pioneer anomaly

Equation (4) can be written as:

$$a_p = [W\sin a]c \tag{6}$$

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

the numerical value of the quantity $W\sin a$ is 5.035×10^{-18}rad/sec which is very near to the value of the Hubble constant, but we will clarify this in the next section about the Hubble phenomenon.

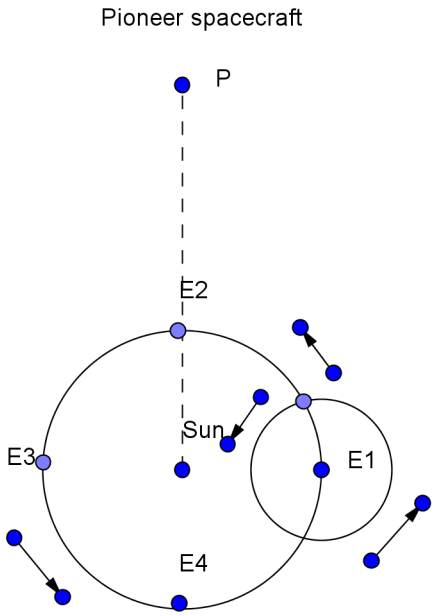
2.3 The annual and diurnal variations of the effect

This is 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 remains constant with respect to the Sun, and the Earth is changing it's position along it's orbit, there will be

two points where the effect will be maximum, and two points where the effect is minimum, as in figure (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 because the value of $\sin a$ will be minimum at these two points.

Figure 2: Again 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 it's 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 at these two points due to aberration, and at points E1 and E3 the effect will be minimum as expected for a phenomenon which is dependent on aberration to be observed.



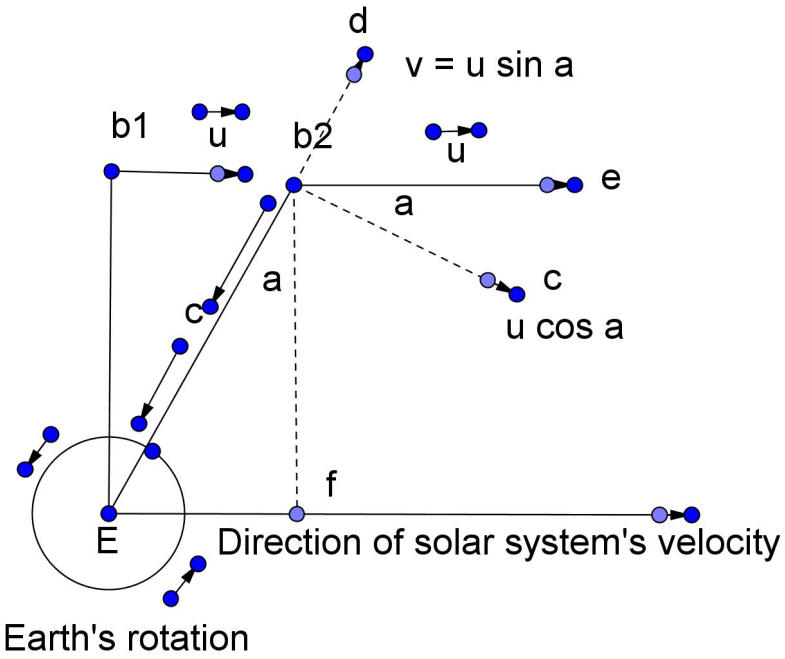
3 The Hubble phenomenon

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 the 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 generator, for viewing the relatively rotating Universe through an angle, with the Earth generating the (resultant relative rotation) discussed in the introduction section.

Now given the "resultant relative rotation" or RRR discussed above 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.

Figure 3: Figure 3 showing the true nature of the cosmic object's red-shift observed by the American astronomer Edwin Hubble, the velocity by which an object is moving away from us along line of sight is nothing but a component of the tangential velocity due to relative Universal rotation, along our line of sight, at point E is an observer on Earth's surface along it's equator, and at point b1 is a cosmic object at distance d from the Earth's center, but due to aberration due to the movement of the solar system the object will be seen at point b2 , the angle a is the angle of aberration, the Earth is spinning counterclockwise as seen above the north pole, therefore the Universal relative rotation will be in a clockwise manner, $u = Wd$ is the tangential velocity due to rotation, what we observe is the component of this velocity along our line of sight or $v = u \sin a$, the other component of u perpendicular to our line of sight is impossible to observe.



Here and to clarify and concentrate on the concept only so that the results can be applied 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 figure (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 it's 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 figure (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 it's north pole, and hence Earth will be rotating around it's own axis in a counterclockwise manner, this counterclockwise rotation will generates a counterclockwise resultant inertial rotation RIR which is impossible for an observer on Earth to detect as described in the introduction, but the counterclockwise resultant rotation will generate a clockwise Universal resultant relative rotation or RRR and according to the first postulate, the value of the angular velocity due to this rotation, is given by equation (1) , and since we concentrate here only on equatorial observers, we will use equation (2) or $W = \dfrac{Gm_e\omega_e}{c^2 R_e}$, as discussed before the RIR is 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 rotating in the opposite sense, or clockwise as observed from the north pole, with this same angular velocity, and due to this rotation, distant objects will possess a tangential velocity, if we imagine a huge circle centered on Earth, with the object moving along the circumference of this circle, then according to circular movement theory, the value of this tangential velocity will be given as: $\mathbf{u} = Wd$ 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 the Earth moves to the wright, 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 figure (3) at point b1 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 Earth's axis of rotation, and the solar velocity vector direction.

Now in the absence of the solar movement, it will be impossible to detect this relative rotation, this rotation 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 there will be no transverse Doppler red-shift, this of course means the absence of time dilation, therefore it is impossible to detect this rotation 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 b2 instead of point b1 , and according to the second postulate, this 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 cb2 is perpendicular to the line of sight, the line db2 is an extension of the line of sight, and the line eb2 represents the tangential velocity due to Universal resultant relative rotation RRR in it's original direction as that at point b1, it is clear that the angle cb2e

equals the angle Eb2f and that is the angle of aberration a , we need to mention that the figure is not drown to scale, and we exaggerated angles for clarity sake.

The Hubble's red-shift

Now using the angle cb2e 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, we can observe only the component along our line of sight, now from figure (3) the component of $\mathbf{u}$ perpendicular to the line of sight can be given as: $v_p = \mathbf{u}\cos a$ this component will go unnoticed, and the component along the line of sight will be:

$$v = \mathbf{u}\sin a \tag{7}$$

but from the circular motion theory we can write $\mathbf{u} = Wd$ and so we can rewrite equation (7) as: $v = Wd\sin a$ or:

$$v = [W\sin a]d \tag{8}$$

comparing equation (8) with the Hubble's law $v = H_0 d$ we can write:

$$H_0 = W\sin a \tag{9}$$

therefore we can claim that the Hubble constant is not a real constant, it depends on the aberration angle, and hence it's 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. It is clear from equation (7) that an observer will see the distant object moving away from him, along his line of sight, with a velocity directly proportional to the distance from Earth.

From figure (3) using the triangle Eb2f we can write: $\sin a = \dfrac{v_\odot}{c}$, so equation (9) can be rewritten as:

$$H_0 = \frac{Gm_e\omega_e v_\odot}{c^3 R_e} \tag{10}$$

All the terms have their above described meanings, this equation gives the maximum value of the Hubble parameter, if we know for sure the value of the solar system barycenter's velocity and it's direction, it will be possible to find the maximum value of the Hubble parameter, and the direction to look for the corresponding object with the maximum value, also if we know the maximum value of the Hubble parameter, it will be possible to find the correct value of the solar system's peculiar velocity with respect to it's local standard of rest.

Now let us assume that the maximum value of the Hubble parameter is 70 km/sec/mega-parsec, solving equation (9) for $v_\odot$ we can write:

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

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, now this result justifies using $v_{\odot}$ for the velocity of the solar system that generates the aberrational angular displacement of distant objects, which is essential for viewing a component of the tangential velocity due to RRR along our line of sight.

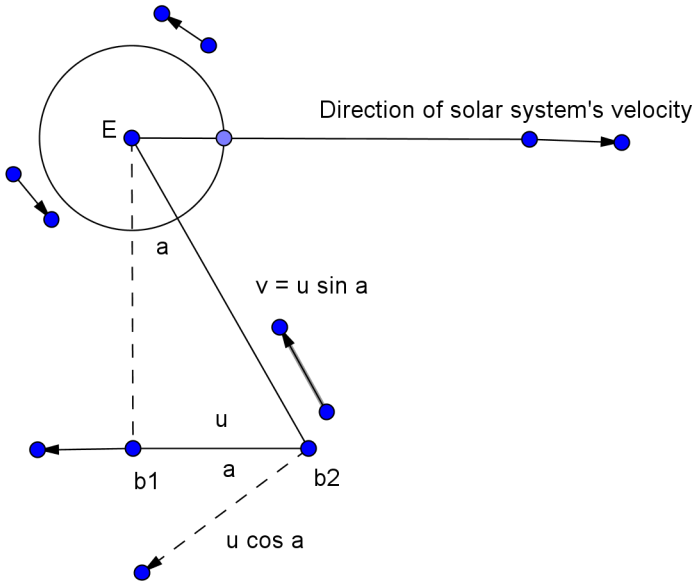
The Hubble's blue-shift

If equatorial coordinates used, it is very easy to show that the plane made by Earth's axis of rotation and the line representing the direction of the solar system's velocity vector, divides the universe into two hemispheres, one which is away from the Galactic center is red-shifted, the other in the direction of the center of the Galaxy will be blue-shifted as in figure (4) below, and this can be done by the same logic used above to show the red-shift, this is because for the hemisphere in the direction of the Galactic center, 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, the cosmic object will appear to be moving towards us, and hence a blue-shift will be observed.

Now we may argue that the majority of blue-shifted galaxies, with great blue-shift lie behind the zone of avoidance, 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 is low compared to that in the direction towards the center of the Galaxy, 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 south pole where the Hubble parameter becomes highly unstable, due simply to it's dependence on the aberration angle, the value of the sine function will become small as we look towards the south pole, and may even be zero at exactly the south 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 attributed 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.

Figure 4: The figure is not drawn to scale, we exaggerated the aberration angle (a) for the sake of explanation, the observed object is at point b1 from an observer at point E along Earth's equator, the line Eb1 is perpendicular to both Earth's axis of rotation and the direction of the solar system's velocity vector, b2 is where we actually see the object due to aberration effect, the line Eb2 is the line of sight, the angle b1Eb2 = a is the angle of aberration, Earth is viewed here from above it's north pole therefore spinning counterclockwise as indicated by arrows, the Universe will be rotating with the resultant relative rotation in a clockwise manner, the object at b1 will have a tangential velocity u , an observer at E will see a component of u along his line of sight or $v = u \sin a$, as in the figure the direction of the velocity v is towards the observer and hence a blue-shift will be observed, the component perpendicular to the line of of sight $u \cos a$ will not be observed.



The Hubble 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 Universal resultant relative rotation for our Moon, have the value: $W_m = 8.3668 \times 10^{-17}$rad/sec and for very distant 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 and 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 which is essential for the value of the Hubble parameter, that is why for planet Uranus it is meaningless to speak about the Hubble parameter.

Now for the Earth's Moon $\sin a = 4.47 \times 10^{-5}$ therefore the Hubble constant for an observer on the Moon will be:

$$H_m = W_m \sin a = 3.74 \times 10^{-21} rad/sec \tag{12}$$

or since $v = H_m d$ and for one mega-parsec one can write:

$$v = 0.115\, km/sec/megaparsec = 115.4\, m/sec/megaparsec \tag{13}$$

this means that the red-shift or the blue-shift measured on the Moon's local gravitational rest frame will be less by about 606 times than that measured on Earth.

In general and to calculate the universal RRR we can rearrange equation (2) to be :

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

now the constant $\frac{2\pi G}{c^2}$ is the same for all cosmic objects from asteroids to neutron stars, where T is the periodic time of rotation, of course this equation is valid only for an observer at the equator.

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, below is a table to show the RIR and 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 it's unusual alignment of it's axis of rotation with the plane of the ecliptic, hence for Uranus we will show only it's RIR angular velocity, and as for the planet Venus the effect will be reversed,

Table 1: The value of the RIR angular velocity and the Hubble parameter for the Sun and it's planets and for Uranus only the RIR angular velocity is written, W is measured in radians per second, the values for the Earth are: $W_e = 5.068 \times 10^{-14} rad/sec$ and $H_0 = 2.265 \times 10^{-18} rad/sec$.

Name	Sun	Mercury	Venus	Mars	Jupiter	Saturn	Uranus	Neptune
W value	6.1×10^{-12}	$1.2e^{-16}$	$1.8e^{-16}$	$9.9e^{-15}$	$3.5e^{-12}$	$1.2e^{-12}$	$2e^{-13}$	$3.3e^{-13}$
H value	2.7×10^{-16}	$5.6e^{-21}$	$7.9e^{-21}$	$4.4e^{-19}$	$1.5e^{-16}$	$5.2e^{-17}$	——	$1.5e^{-17}$

one will observe a blue-shift for the same objects we claim to be red-shifted, this is because the planet Venus rotates in a retrograde manner compared to Earth.

The Hubble parameter for the neutron star

As usual neutron stars represents the extremes in all respects, neutron star have the minimum radius, shortest periodic time of rotation, and the maximum mass with the exception of black holes, so the value of the Universal RRR must be the fastest, and the corresponding Hubble's parameter must be the largest, using equation (13) 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 neutron star's rotation period the RIR rotation 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 it's local standard of rest, this motion will allow an observer to view the rotating 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 RRR 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, deduced from observations.

4 CMB anomalies

There are many cosmic microwave background surveys, but the most accurate began with the 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 axis of the dipole, quadrupole, and the octopole align with each other and with the ecliptic, now given the universal RRR, and the movement of the sun to allow us to detect this rotation, 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 at one side of the sky, and the blue-shift at the opposite side of the the sky, the effect depends as discussed above on the direction or the value of the aberration angle, the maximum value will correspond to the maximum value of the Hubble parameter, either for red-shift or blue-shift, therefore 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 multi-poles one can see clearly that they are generated by the movement of the Earth around the sun, and hence the low power of the effect 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, as the Earth is moving, there will always be a dipole, which can be obtained following the same rules which we discussed above, 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, the Earth is not the center of the Universe.

5 Magnetic field generation by spinning cosmic objects

Production of magnetic fields by spinning objects like planets, stars, galaxies, and even accretion discs till now is not completely accounted for, but given the above mentioned spin generated relative global rotation, we can give some outlines and hints as to how to construct a plausible and a 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 be a functional theory, so in the following subsections we will give the basic ideas to be discussed, there is no claim that these ideas are all correct.

5.1 Protons outnumber electrons

This is deduced from a large body of data about cosmic rays, that more than 90% of the cosmic rays are protons, so we can assume that in deep space protons outnumber electrons, although the the universe as a whole is neutral, this assumption combined with the above discussed global rotation, then for an observer on a spinning object with a resultant positive charge at a distance d from the center of the object, there will be a magnetic field, the magnetic field will be generated immediately but the produced fields traveling by the speed of light needs a 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 barycenteric 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 field of planets or moons rich with ferromagnetic materials can act as an electromagnet with ferromagnetic core and therefore giving a false dipole field near the surface but far away from the object's surface the true non-dipole nature of the field will be observed, the huge magnetic field surrounding objects is due to this solenoid like generation of the field.

5.2 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 with a larger object, viewed from the local gravitational rest frame of the larger object, all the Galilean moons of Jupiter their magnetic fields seems to be changing we assumed a salty oceans for Europa Callisto and Ganymede, which is strange for those remote and tiny worlds to maintain sufficient heat, for the salty water to be in the 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 11 years, all these mysterious observations can be accounted for if we assumed that the spin of the smaller object is changing continuously as the smaller object orbits the common barycenter, 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 observers point of view on the orientation of the spin of an object orbiting it, so if a magnetic field was produced when the smaller object was at a certain point and received at another, and if we assume the orbit to a circular one then the orientation of the received field will change by the same angular change of the smaller object, and the field will be tilted, this way we can determine the distance to the effective charge, from the outer planets Saturn, Uranus, and Neptune we can make a rough estimation of this distance using these two simple lows:

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

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 distant to the effective charges, ϕ is the apparent or the observed angular tilt, $n = 0, 1, 2, 3, 4, ..., ...,$ from this one can write:

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

where d is the distance to the effective charge and T is time required for the planet to complete one full revolution around the Sun, now for Saturn we can conclude that the planet produced the field and received it after completing one revolution around the solar system barycenter, or $n = 1$, and $\phi = 0$, because

the magnetic field of Saturn is axisymmetric, hence the distance from Saturn to the effective charge is $d = 29.457\, light\ years$, we can test this assumption by applying this rule to Uranus, for Uranus $\phi = 120°$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 is elliptic not circular, for Neptune we get $d = 21,5\, light\ years$, again the orbit of Neptune is highly elliptical.

Note that for Earth's magnetic field to flip the distance to the effective charge needs only half a year away or near to us, that means if the current distance is d_e and measured in light years, then for the magnetic field of the Earth to flip we must have $(\ d_e\ )_{New} = d_e \pm \frac{1}{2}\, light\ years$, and for the solar magnetic field to flip we need to assume some kind of a revolution of the sun around the solar system barycenter as observed from Earth, the Sun must take about 22 years to complete one revolution, so every 11 years the spin orientation of the Sun will flip as we observe it from the barycenteric gravitational rest frame, and as the spin orientation changes so does the magnetic field orientation as we view it.

5.3 The final shape of the magnetic field

The magnetic field as described above is the resultant of the field produced by all the observers on the surface of the spinning object, the angular velocity W of the RIR is maximum for observers at the equator and it's value decreases as we move towards the poles, the final field is a collection of all the fields produced by all observers, for gas planets like Jupiter the whole planet may participate in the production of the field, so a more advanced mathematical treatment is required to predict the final nature of the fields produced by different objects.

5.4 Rough comparison between small objects fields

As we discussed above the magnetic field produced by this mechanism is highly complicated therefore needs an advanced treatment to give the final shape of the magnetosphere of the respective object, but for small object like dwarf plants, asteroids, and planetary moons, one may compare between their fields by comparing their respective RIR angular velocity, and may give an approximate result, so if we consider the value of the angular velocity of the RIR of planet mercury to be the unity, then we can compare between them using the ratio $\frac{W}{W_{Mer}}$, as in the following table (2) for some of the dwarf planets and the asteroid 4 Vesta and the moons of Jupiter Ganymede and Io and the moon of Saturn Titan:

Table 2: If it is correct to compare the magnetic fields of small an simple objects by comparing their respective angular velocities, then table (2) is showing that the dwarf planet Haumea's magnetic field is about 11 times stronger than that of Mercury Ceres more than two times Makemake 8 times asteroid 4 Vesta about two times Ganymede 3.5 times Io more than 12 and Titan about 1.5 times.

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