The Cross-Product and the Electrogravitational Action

Chapter 9

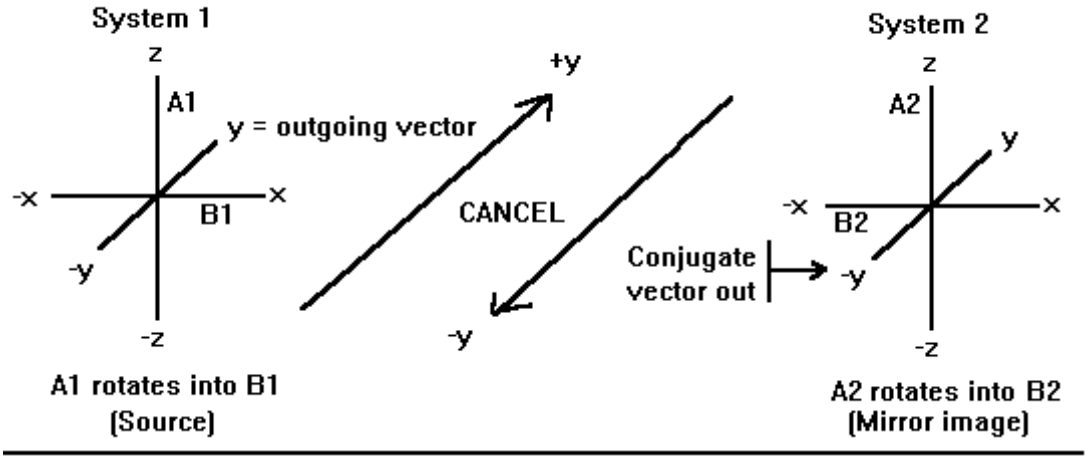
This chapter presents yet another form of the electrogravitational mechanics action via the cross-product method. The interaction between two force systems normally will occure only when their vectors of current action are pointed at each other. This is guranteed to occure by reason of the simultaneous collapse of their interacting wavefunctions. Thus the net result will be a force of attraction between the systems of quantum currents. Otherwise, the position of the quantum current vectors in any system is unknown and completely random during the inaction time.

The concept of wavefunction collapse will be examined in greater detail in the next chapter where the concept of all matter interacting with (and being sensitive to) the presence of all other matter in the universe will also be presented. This will be another way of explaining the previously presented concept of the least quantum classic radius being tied directly to all other least quantum radii through imaginary energy space which is one point connected to all of our normal space.

The vector cross-product is presented below in figure #9 as it pertains to the sign of the gravitational force where attraction is defined as a (-) sign and repulsion is thus defined as a (+) sign.

The System 1 action is a rotation of z into x that generates a vector to the right, (+y), towards the action of System 2. System 2 is a mirror image with a conjugate vector, (-y), of the action axis and rotation so that the generated System 2 vector has a vector that cancels the System 1 vector in conjugate fashion. Please refer to the figure immediately below this text which attempts to clarify this concept.

Figure #9



System 1, rotation is Z into X

System 2, rotation is Z into -X

(259) $A1 := \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} \quad B1 := \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$

(260) $A2 := \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} \quad B2 := \begin{pmatrix} -1 \\ 0 \\ 0 \end{pmatrix}$

Vector cross-product of system 1 is:

Vector cross-product of system 2 is;

(261) $Sys1 := A1 \times B1$

(262) $Sys2 := A2 \times B2$

$$Sys1 = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$$

$$Sys2 = \begin{pmatrix} 0 \\ -1 \\ 0 \end{pmatrix}$$

The total product of system 1 and 2 will yield the sign of the unit-scale electrogravitational action as:

(263) $F_{g1} := Sys1 \cdot Sys2$ or, $F_{g1} = -1$

which is defined as a force of attraction by standard convention. The total interaction is independent of a preferred choice of axis or system since the reaction is always the conjugate of the action system. The result is always attraction.

The vector cross-product in system 1 on page 145 previous may be oriented starting with z, x, -z, or -x for A1 as long as the right hand rule is applied for placing B1 immediately after A1 in the next clockwise right-angled position. The outgoing vector is always aligned along the y axis and is taken as beginning from the origin of the Cartesian system that is comprised of the x, y, and z reference lines as shown above. The reaction involving system 2 is the mirror image and therefore the conjugate of system 1 no matter what the original orientation of system 1 may have initially been. Therefore the resultant force between system 1 and system 2 is always one of attraction. This may be verified by the reader by changing the beginning axis of A1 and B1 in system 1 and then also changing A2 and B2 in system 2 to reflect a conjugate mirror image of system 1. The total interaction force shown as Fg1 will always be one of attraction. (B1 must follow A1 in a clockwise right-angled fashion.)

It is postulated by this author that the action from system 1 is felt by system 2 instantaneously but the reaction from system 2 is felt by system 1 at the limiting velocity of light in free space. This is by reason that there exists a constant radius involving the classical radius of the electron, (l_q), that is connected to the singular imaginary space interconnect that connects all of normal space to one point in imaginary energy space. It is this distance that is related to the instantaneous action. The other radius is a variable and is the distance in normal space between system 1 and system 2. It is this distance that is related to the reaction limiting velocity of light in free space. By imaginary space I do not mean *not real* but rather purely reactive energy such as purely inductive or capacitive standing wave energy connecting all of normal space to one energy source in alternate space-time. That space exists as a time slice right next to our normal space and supports our space

much like a projector supports a virtual world upon a movie theater screen. Our normal space however is three dimensional and is comprised not only of standing field-wave energy (mass) but also supporting living beings endowed with self-volition of thought and physical action. It is further postulated that the energy-space that supports normal space can start or stop normal space action at any time for any required length of time and without normal space beings being any the wiser.

The above postulate places our normal space at the complete mercy of a higher ordered energy and intellect. While a large number of scientists feel comfortable in dismissing the concept of there being a God that is the all creator, I personally feel that a comprehensive *Theory Of Everything*, (TOE), must logically include such a possibility in its basic concept since God is energy and energy is everything.

The ability to start or stop normal space at any time for any length of time allows for adjustment as necessary for maintaining reasonable normal space continuity when tears or rips in our space begin to appear or become a threat to normal space existence, (A nuclear explosion for instance.) It also allows for evolvement adjustment of the species which is not of course what Darwin suggested at all. Present day evolvement of the species is rather more likely the result of a huge amount of constructive input and not in any sense an accident by way of what is called natural selection. If what Darwin suggested was the only prime mover in evolution this would indeed be a very bizarre if not totally barren planet. There is not enough elapsed time for random molecular opportunity to allow for the possibility of present day evolution from the primordial soup to what is now evolved. It is also a law of thermodynamics that guarantees that matter tends to devolve by entropy rather than constructively evolve over time. This is also a form of Murphy's law wherein it is stated, "anything

that can go wrong will go wrong." This leaves no room for events to *naturally* go right.

Perhaps a way of further illustrating normal space matter existing as supported field-mass from imaginary energy-space is to have the reader think of themselves as only existing during a strobe light flash such as are sometimes seen at dance clubs. There could be many other worlds of action going on between the flashes that the reader would be totally unaware of. Time-slices are a familiar concept in computer technology such as running several programs at once. (A part of each program is actually run at any one time and the computer keeps track of which part belongs to which program.) Therefore continuous motion is apparent to the observer but in the fine scale the action is composed of slices of time. Thus one program is not allowed to run into or become a part of another program at any time. Truly, every hair is accounted for on the collective pate of reality. Also, the time line is always in one direction since the microprocessor clock does not run backwards. This is a parallel for what we take as the unidirectional arrow of time in normal space. Therefore, only the master programmer has access to what has occurred in the past concerning the normal space program.

The utilization of the vector cross-product has a parallel in the unidirectional sense since it is generated at right angles to two non-parallel vectors and is somewhat also like the concept of the Big Bang since it has a point beginning and is possibly open-ended as to its eventual limit. Also the vector cross-product has the feature of being non-commutive in that A x B is not equal to B x A. In fact, A x B = - (B x A). This guarantees a force of attraction for the case of mirror image symmetry involving the reaction vector as compared to the original action vector. Further, the relationship of the magnetic vector potential to the vector cross-product can be illustrated to be a

very close one indeed.

One of the strongest arguments against an electromagnetic connection to the gravitational field was that an electromagnetic field can be shielded against while the gravitational field cannot. Further, the electromagnetic field has a bipolar aspect consisting of a negative and positive sense in the field and is a closed field such that all magnetic lines form a closed loop. Also, the gravitational field apparently has no counterpart aspect of repulsion as does the magnetic or electric fields. The **m**agnetic **v**ector **p**otential [1] CAN however act through the best of shielding and when combined with the concept of the vector cross-product of two quantum uncertain currents acting 90 degrees to each other, the quantum electrogravitational action is generated that we take to be what is currently called gravity. Even though the action is unidirectional and always outwards from the origin, the reaction is a mirror image and is the conjugate of the action vector in every way. Thus the total interaction that occurs in part in normal space is closed through the classic quantum radius points through imaginary energy space while to an outside observer in normal space it would appear that a monopole action had just occurred.

It has been demonstrated that the wavefunction of an electron may be changed in a region where there is no magnetic field of flux. Therefore the magnetic potential vector (**A**) appears to be able to affect an action in the absence of its (**B**) field.

Note (1) above: See the article, "Quantum Interference and the Aharonov-Bohm Effect", Scientific American, April 1989, pages 56-62 by Yoseph Imry and Richard A. Webb for a very lucid explanation of the quantum aspects of the electric scalar potential and the magnetic vector potential and how they cannot be shielded against.

Partial quotes from the article referenced in footnote 1 on page 149 previous are; "When the theories of relativity and quantum mechanics were introduced, the potentials, not the electric and magnetic fields, appeared in the equations of quantum mechanics, and the equations of relativity simplified into a compact mathematical form if the fields were expressed in terms of potentials." Also is further quoted; "The consequence of the Aharonov-Bohm effect is that the potentials, not the fields, act directly on charges."

The cross-product potential method described previously is now presented below for a two system interaction involving current vectors 90 degrees to each other that are generated by the uncertainty of charge position occurring in the right-hand rule fashion in system 1 and which then cause a mirror image conjugate reaction in system 2. This will be for systems at the atomic Bohr radius during wave function collapse.

Let the following parameters be established:

$q_o := 1.602177330 \cdot 10^{-19} \cdot coul$ Electron charge.

$\mu_o := 1.256637061 \cdot 10^{-06} \cdot henry \cdot m^{-1}$ Free space permeability.

$V_{LM} := 8.542454612 \cdot 10^{-02} \cdot m \cdot sec^{-1}$ Mag. rotational vector velocity.

$l_q := 2.817940920 \cdot 10^{-15} \cdot m$ Classic electron radius.

$r_{n1} := 5.291772490 \cdot 10^{-11} \cdot m$ Bohr n1 radius.

$\theta := \frac{\pi}{2}$ $\phi := \frac{\pi}{2}$

Now let the following establish the system 1 action involving the two right angled currents generated by quantum charge position uncertainty;

(264) $\iota_{1a} := \frac{q_o \cdot V_{LM}}{l_q} \cdot \sin(\theta)$ where, $\iota_{1a} = 4.856924793831499 \cdot 10^{-6} \cdot amp$

(= imaginary space quantum constant current.)

and;

(265) $\iota_{1b} := \frac{q_o \cdot V_{LM}}{r_{n1}} \cdot \sin(\phi)$ where, $\iota_{1b} = 2.586378599564538 \cdot 10^{-10} \cdot amp$

(= normal space variable distance current.)

and where sin(θ) and sin(ϕ) are equal to: $\sin(\theta) = 1$ $\sin(\phi) = 1$

which are the angles formed by the quantum charge uncertainty directions to the direction of current formed by the quantum motion of the electron originally.

It is apparent that a spherical shell of uncertainty would form about an isolated charge in random quantum motion while for a moving charge forming a current line, a cylindrical shell of uncertainty would be formed around the direction of charge motion.

Then the quantum current vector potentials for system 1 may be stated as;

(266) $A1 := \begin{pmatrix} 0 \\ 0 \\ \iota_{1a} \end{pmatrix} \cdot amp$ (267) $B1 := \begin{pmatrix} \iota_{1b} \\ 0 \\ 0 \end{pmatrix}$ Rotation is: Z into X.

and thus when the dimensional constants are included times the vector cross-product;

(268) $Sys1 := \frac{\mu_o}{4 \cdot \pi} \cdot (A1 \times B1)$

or, $Sys1 = \begin{pmatrix} 0 \\ 1.256184634210259 \cdot 10^{-22} \\ 0 \end{pmatrix} \cdot newton$

This is the localized system 1 force of quantum uncertain current and it is the outgoing (+y) magnetic vector potential.

Then also for system 2;

(269) $\iota_{2a} := \frac{q_o \cdot V_{LM}}{l_q} \cdot \sin(\theta)$ where, $\iota_{2a} = 4.856924793831499 \cdot 10^{-6} \cdot amp$

and;

(270) $\iota_{2b} := \frac{q_o \cdot V_{LM}}{r_{n1}} \cdot \sin(\phi)$ where, $\iota_{2b} = 2.586378599564538 \cdot 10^{-10} \cdot amp$

Then also the quantum current potentials for system 2 may be stated as;

(271) $A2 := \begin{pmatrix} 0 \\ 0 \\ \iota_{2a} \end{pmatrix} \cdot amp$

(272) $B2 := \begin{pmatrix} -\iota_{2b} \\ 0 \\ 0 \end{pmatrix}$ Rotation is: Z into -X.

and thus the cross-product of the current potentials times the geometrical constant is;

(273) $Sys2 := \frac{\mu_o}{4 \cdot \pi} \cdot (A2 \times B2)$

or, $Sys2 = \begin{pmatrix} 0 \\ -1.256184634210259 \cdot 10^{-22} \\ 0 \end{pmatrix} \cdot newton$

This is the localized system 2 force of quantum uncertain current and is the outgoing (-y) magnetic vector potential.

Finally, inserting the correct geometrical parameters the entire interaction forming the resultant electrogravitational result is;

(274) $F_g := (Sys1) \cdot \mu_o \cdot (Sys2)$

or, $F_g = -1.982973075196837 \cdot 10^{-50} \cdot newton^2 \cdot \left(\frac{henry}{m}\right)$

Only one newton term is a variable and is related to the distance between centers of the systems in question and is a force inversely proportional to the square of the distance between their centers. The other newton term is a constant related to the classic radius of the electron as shown previously in equations (264) and (269). Their total product is shown as newton squared. Next, the classical value for the force of gravity is shown below for the sake of comparison.

Let the following parameters be established for the Bohr radius:

$m_e := 9.109389700 \cdot 10^{-31} \cdot kg$ Electron rest mass.

$G := 6.672590000 \cdot 10^{-11} \cdot newton \cdot m^2 \cdot kg^{-2}$ Gravitational constant.

Then for the classical expression;

(275) $$FG := \frac{G \cdot m_e \cdot m_e}{r_{n1}^2} \quad \text{or,} \quad FG = 1.977291388968519 \cdot 10^{-50} \cdot newton$$

The henry/meter units would not be apparent to the outside observer such they form a constant of interaction that is unaffected by interaction distance between systems. One of the Newton terms is the only detectable parameter and it is a variable.

Also there is no forward momentum to the y vector. The momentum is in the rotation of the z and x vectors which cancel when systems interact along the y vector path. Attraction along the y vector path occurs after the x and z rotation vectors cancel which creates an energy void between the systems of interaction. Therefore the interacting systems tend to move together due to the field energy vacuum between them.

Equation (274) above is now the preferred electrogravitational equation and thus

the previous forms, while generally containing the basic mechanics, are not as exact in explaining the system interaction dynamics. In fact, equation (274) may yet again be improved upon in the future for this is a complex force and further inspiration may yield an even closer form for the ultimate electrogravitational statement.

In chapter 1, page 16, the electrogravitational quadset of equations are all still generally acceptable regarding the mechanics of two system interactions of separate system forces causing the electrogravitational force. They are all different facets of the same idea. Equation (274) on page 152 previous is a new way of looking at the same principle as well as a hopefully improved way. In this vein the weak force and the strong force equations in chapter 1, on pages 17, 18, and 19 respectively, will be examined by method of the vector cross product.

First we will define additional parameters as;

$\varepsilon_o := 8.854187817 \cdot 10^{-12} \cdot farad \cdot m^{-1}$ Dielectric Permittivity of free space.

$r_{cn} := 2.100194469 \cdot 10^{-16} \cdot m$ Compton radius of the Neutron.

$r_{ec} := 3.861593223 \cdot 10^{-13} \cdot m$ Compton radius of the Electron.

Further let new magnetic potentials for a system 2 be defined as:

(276) $\iota cn2_a := \frac{q_o \cdot V_{LM}}{r_{cn}} \cdot \sin(\theta)$ (277) $\iota cn2_b := \frac{q_o \cdot V_{LM}}{r_{cn}} \cdot \sin(\phi)$

where;

$\iota cn2_a = 6.516790384852854 \cdot 10^{-5} \cdot amp$ and $\iota cn2_b = 6.516790384852854 \cdot 10^{-5} \cdot amp$

Then the magnetic vectors associated with the above current potentials are;

(278) $Acn2 := \begin{pmatrix} \iota cn2_a \\ 0 \\ 0 \end{pmatrix}$ (279) $Bcn2 := \begin{pmatrix} 0 \\ 0 \\ \iota cn2_b \end{pmatrix} \cdot amp$ Rotation is: X into Z.

Then inserting the following dimensional constants into the cross-product of the current potentials above;

(280) $Sys2_{cn} := \frac{\mu_o}{4\cdot\pi}\cdot(Acn2 \times Bcn2)$

or; $Sys2_{cn} = \begin{pmatrix} 0 \\ -4.246855690537861\cdot 10^{-16} \\ 0 \end{pmatrix}\cdot newton$

This is the Compton system 2 outgoing (-y) magnetic potential vector.

The above is the magnetic vector potential that is set at the interaction distance of the Compton radius of the Neutron.

Next we will determine the electric vector potentials associated with the quantum charge uncertainty right-angled action also at the Compton radius of the Neutron. Now let the Neutron electric potentials be defined as;

(281) $\upsilon_{1a} := \frac{q_o}{r_{cn}}$ (282) $\upsilon_{1b} := \frac{q_o}{r_{cn}}$

where,

$\upsilon_{1a} = 7.628709405957398\cdot 10^{-4}\cdot sec\frac{amp}{m}$ $\upsilon_{1b} = 7.628709405957398\cdot 10^{-4}\cdot sec\frac{amp}{m}$

Then the charge potential uncertainty vectors are;

(283) $Ap1 := \begin{pmatrix} 0 \\ 0 \\ \upsilon_{1a} \end{pmatrix}\cdot sec\cdot\frac{amp}{m}$ (284) $Bp1 := \begin{pmatrix} \upsilon_{1b} \\ 0 \\ 0 \end{pmatrix}$ Rotation is: Z into X.

and thus when the dimensional constants are included for the uncertainty charge potential cross-product is;

(285) $Sysp1 := \frac{1}{4\cdot\pi\cdot\varepsilon_o}\cdot(Ap1 \times Bp1)$ = charge-potential action system.

or, $Sysp1 = \begin{pmatrix} 0 \\ 5.23050413631724 \cdot 10^{3} \\ 0 \end{pmatrix} \cdot newton$

Then finally, the weak force is given as:

(286) $Fw := Sysp1 \cdot \frac{2 \cdot \pi^{2}}{\varepsilon_{o}} \cdot Sys2_{cn}$ or, $Fw = -4.952130315252498 \cdot \frac{m}{farad} \cdot newton^{2}$

where the Sys2 magnetic vector potential is the more likely unification parameter and since it is (-) it will yield an overall force of attraction. There is a probability that the Sys2cn vector uncertainty could change the vector 180 degrees and cause Fw to become a (+) force and it is that mechanism that could cause decay of a bare neutron. The ratio of the absolute magnitudes of the electric coulomb force Sysp1 to the weak force Fw is given below as;

(287) $Rcw := \frac{Sysp1}{Fw}$ or, $Rcw = \begin{pmatrix} 0 \\ -1.056212943388698 \cdot 10^{3} \\ 0 \end{pmatrix} \cdot \frac{farad}{m \cdot newton}$

where the absolute magnitude is given as:

$|Rcw| = 1.056212943388698 \cdot 10^{3} \cdot farad \cdot m^{-1} \cdot newton^{-1}$

This sets the coulomb force as close to 1000 times as strong as the weak force in magnitude at the Compton radius of the Neutron.[2]

The strong force is similar in its form to the weak force equation above wherein only the connecting term geometry need be changed.

Note 2 above and on the bottom of page previous: Page 110 of Scientific American (January 1990) in the article "Handedness of the Universe" states that "The weak force is 1000 times less powerful than the electromagnetic force and 100,000 times less powerful than the strong nuclear force."

Therefore;

(288) $Fs := Sysp1 \cdot \left(\frac{2 \cdot \pi \cdot r_{n1}}{\varepsilon_o \cdot r_{cn}} \right) \cdot Sys2_{cn}$

or, $Fs = -3.971767755918961 \cdot 10^5 \cdot \frac{m}{farad} \cdot newton^2$

and the ratio of the strong force at the Neutron radius to the weak force is[2]:

(289) $Rsw := \frac{Fs}{Fw}$ or, $Rsw = 8.02032156481417 \cdot 10^4$

and the ratio of the strong force to the Coulomb force at the Neutron radius is[2];

(290) $Rsc := \left| \frac{Fs}{|Sysp1|} \right|$ or, $Rsc = 75.93470251445883 \cdot m \cdot \frac{newton}{farad}$

See note 2 on the previous page concerning the relative force magnitudes of the coulomb, weak and strong forces. While the relative magnitudes are not precisely 100,000 for the force of the strong nuclear force to the weak force at the Neutron radius, 80,000 is fairly close for this distance considering that it is not the actual binding energy interaction distance. Also the ratio of the strong force to the Coulomb force is not exactly equal to 100 but again is fairly close considering the approximate interaction distance used which again is equal to the Compton radius of the Neutron.

Please note that the electric and magnetic forces are considered herein as singular system interactions that contain coupled quantum-uncertain instantaneous displacements of a singular charge that forms a two-charge interaction through normal space. This may be expanded upon by considering that if a charged particle is considered as instantaneously jumping back and forth, it can couple to itself through the field established at the velocity of light across the distance that it jumps through. If in linear motion, a wave of probability would result. If in circular motion, a

standing probability wave would most likely result. If not in relative motion to another local particle, a spherical shape would best describe the probable location of the charge around its most likely position in space-time.

This is a universal situation that occurs everywhere in the universe and every singular system sees all other such quantum-uncertain systems as conjugate systems, (mirror-images), that will call for the case of attraction. All quantum displacements are right-handed in sequence of vector displacement. Quantum displacements of charge may be thought of as either being an instantaneous current vector or voltage difference vector, thus there exists a vector voltage potential as well as a current (magnetic) vector potential.

Both the electric potential and the magnetic vector potential can use the cross-product approach since the uncertainty at 90 degrees can generate a new vector. This vector is 90 degrees to the two initial 90 degree displaced uncertainty vectors.

The above may play a fundamental role in the process of superconductivity. If one considers that an alternating tunneling process may occur wherein a hole or electron keeps jumping forward across space in quantum uncertain fashion from its last temporarily established position, then superconductivity is the result of a coherent process of quantum uncertainty in inline forward action. Therefore, in the case of the above postulate, for a superconductor, the S-wave is the spherical electric potential field caused by the instantaneous displacement of charge while the D-wave is the right-angular (lobed) wave related to the magnetic B-field generated by the instantaneous displacement (inline) of the general charge displacement. Further, since the vector-potential cannot be shielded against, if the quantum displacement associated with the generation of the vector-potential were to occur near a nucleus,

say a Deuterium nucleus, then a nucleus may "swallow" the particle that was generating that vector potential.

This would be fusion and thus a low energy form of the fusion reaction that is usually done at very high energies such as in a fusion reactor. It has been noted to occur sporadically in some cases and has been labeled "cold fusion". This type of action is difficult to control since the mechanism relies on quantum uncertainty and nuclear distances of interaction. It is however an expected possibility due to the nature of the quantum uncertainty principle as set forth by Heisenbergs uncertainty principle. That is, if you slow down a particle enough, its position in space-time becomes very uncertain. It could even land in and be captured by an adjacent nucleus. This is simply the nature of quantum action as it is presently understood and accepted by the physics community world-wide. Therefore cold fusion is very probable and possible as defined by the already known and accepted principles of quantum physics.

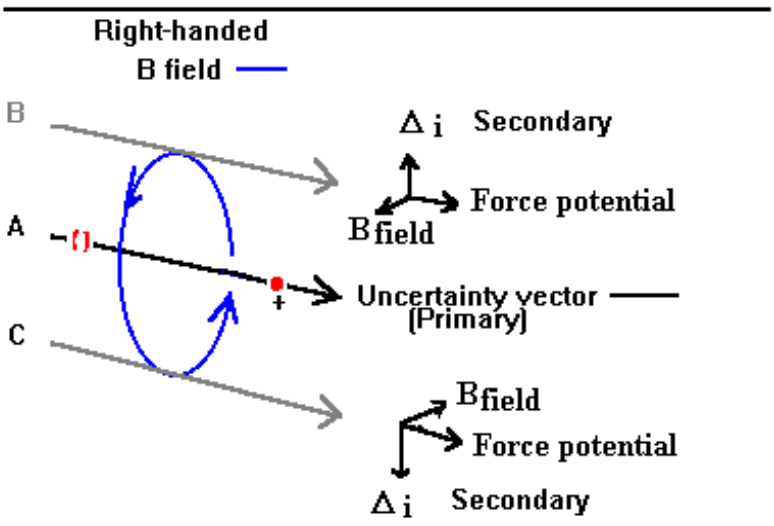
For a summation of the preceding concerning the electrogravitational, strong and weak forces, let us return to where we left off on the singular cross-product system and the generation of the vector potential action. The electrogravitational, strong and weak forces are all two system interactions, (at a minimum), that are unified by their common use of the vector potential, therefore this approach unifies the forces. This has all been presented before by this author but not in the context of the quantum-action vector potential cross-product being a mechanism of the interaction forces.

It is obvious that anti-gravity would be most likely achieved by creating a left-handed system field between a local mass system and a vehicle or craft

designed for the purpose of interstellar travel. The force would repel on one side where the left-handed field was opposing the local gravitational field and attract the far mass of outer space with a normal right-hand field on the opposite side.

The theory of the generation of the electrogravitational pondermotive vector potential is based on the quantum mechanical uncertainty principle wherein a charged particle is first postulated to exist in free space by whatever cause. Then that particle spontaneously experiences a quantum uncertain jump along some line of action as shown in figure 10 below and where that line is the primary current uncertainty line designated as (A) in the drawing. (This action must occur eventually and is guaranteed to do so by the accepted theory of quantum mechanics.) It may also experience that jump in any direction whatsoever and is instantaneous.

Figure 10



Pondermotive Uncertainty Vector Potential Generation

Next, the primary uncertainty vector experiences another quantum uncertainty jump to position (B) where it meets the established B field as shown with the uncertainty current Δi direction as shown. This creates the vector force potential as

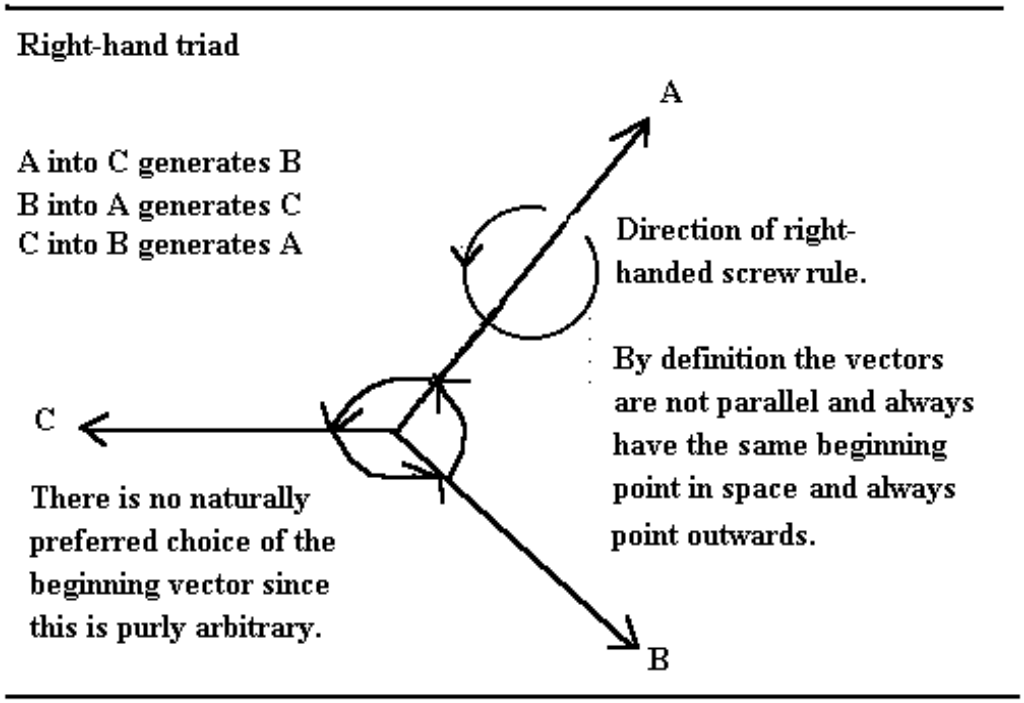
shown in front of vector (B). Further the next jump from the primary vector may be to the vector (C) as shown in figure 2 where it again generates a potential force vector as shown in front of vector (C). This action will eventually form a vector force potential pointing outwards from the charged particles most likely or probable location in all possible directions, forming a spherical shape of outwards pointing vector force potential.

Any and all other charged particles may be considered to be doing exactly the same and when charge is considered as either (+) or (-) the vector force potential still points outwards since the direction of the B field generated by the initial quantum uncertain displacement will be opposite for opposite charge situations. Therefore a vector cross-product will describe the quantum uncertainty generation of the vector force potential described above which we will now define as a case for vector potentials in general.

The vector cross-product is a mathematical concept developed long ago to give a mathematical formalism to the action of electromagnetic fields and the direction of force that a given current will impart when in the presence of a magnetic field. This is a well established formalism and therefore can very well be adapted to the newer but still just as established quantum uncertainty principle as outlined above in figure ten and in the related text concerning it.

The concept of the right-hand screw rule is presented next in figure 11 and is doubtless familiar to those who have studied static magnetic field theory. Here we have the familiar right-handed triad that represents the force vector derived from the interaction of current and field flux.

Figure 11



The vector cross-product approach can be utilized to allow non-parallel differential quantum displaced charge generated (voltage) vectors as well as similarly generated current vectors which then generate vector force potentials at right angles to them as has previously been presented in this paper.

In summation, the vector force potential cannot be shielded against and its generation involves quantum uncertain jumps that occur instantaneously. The action is based on the right-handed rule of static magnetic field theory as it is applied to a quantum mechanical aspect involving the spontaneous generation of a pondermotive force vector potential. This action can be analyzed by use of the cross-products of the uncertainty currents or potentials generated through naturally occurring and spontaneous quantum action on charges (or matter in general) that may be equivalent to charge. Again, charge can be shown to be intimately related to mass as is shown next. (This is so important that it bears repeating.)

First let:

$\mu_o := 4\cdot\pi\cdot 1\cdot 10^{-7}\cdot henry\cdot m^{-1}$ Permeability of free space.

$q_o := 1.602177330\cdot 10^{-19}\cdot coul$ Electron charge.

$l_q := 2.817940920\cdot 10^{-15}\cdot m$ Classic electron radius.

Then,

(291) $m_e := \frac{\mu_o\cdot q_o^{2}}{4\cdot\pi\cdot l_q}$ or, $m_e = 9.109389691413149\cdot 10^{-31}\cdot kg$

where charge squared is shown to be directly related to mass by the geometrical constants of the permeability of free space and the classical radius of the electron. Therefore charge is inside of mass in the form of a quantum standing-energy-wave.

It may further be developed that the classical radius of the electron is based on the Compton electron radius times the fine structure constant. This concept is extended to the classical radius of a proton for the proper force calculation involving the mass generating charge directly. First let the following constants be stated:

$h := 6.626075500\cdot 10^{-34}\cdot joule\cdot sec$ Plank constant.

$\varepsilon_o := 8.854187817\cdot 10^{-12}\cdot farad\cdot m^{-1}$ Dielectric permittivity of free space.

$c := 2.997924580\cdot 10^{08}\cdot m\cdot sec^{-1}$ Velocity of light in free space.

$\alpha := 7.297353080\cdot 10^{-3}$ Quantum fine structure constant.

First, as a check, the classical radius of the electron is calculated:

(292) $l_q := \frac{h\cdot\alpha}{2\cdot\pi\cdot m_e\cdot c}$ or, $l_q = 2.817940945728527\cdot 10^{-15}\cdot m$

= accepted known value.

Then the classical radius of the Proton is calculated:

$m_p := 1.672623100\cdot 10^{-27}\cdot kg$ Proton rest mass.

then,

(293) $l_{qp} := \frac{h\cdot\alpha}{2\cdot\pi\cdot m_p\cdot c}$ $l_{qp} = 1.534698534417613\cdot 10^{-18}\cdot m$

Since mass increases relativistically with an increase in relative velocity or increase in gravitational gradient potential, lq or lqp decreases by inverse proportion to the increase in mass. Let the initial relative velocity be set equal to zero. Also the mass increase due to a gravitational gradient potential be set equal to zero. Then:

let $v := 0 \cdot m \cdot sec^{-1}$ thus;

(294) $$m_{p'} := \frac{m_p}{\sqrt{1 - \frac{v^2}{c^2}}}$$

The point of deriving the classical particle radius as a function of its relativistic mass is to indicate that the concepts presented by this author do not intend to divorce the theory as presented from the special or general laws of relativity but rather include Einstein's theory when relativistic velocities and large gravitational potential gradients are present and need to be considered as locally influencing factors to the system being considered or analyzed. It is the mechanics of electrogravitation that are being presented and not an attempt to overthrow present relativistic theory. The main difference between the present interpretation of curved space causing gravity and my theory is that I present the concept that curved space is the result of gravity and not the cause, which is a simple but very fundamentally important approach for a workable solution to the mechanics of a gravitational action control principle.

Let us establish the magnetic vectors for a proton-electron electrogravitational action at the r_{n1} radius of the Bohr atom of Hydrogen.

First system 1 is established as:

(295) $\iota cp1_a := \frac{q_o \cdot V_{LM}}{l_{qp}} \cdot \sin(\theta)$ and, $\iota cp1_b := \frac{q_o \cdot V_{LM}}{r_{n1}} \cdot \sin(\phi)$

where;

$\iota cp1_a = 8.918055771190335 \cdot 10^{-3} \cdot amp$ and, $\iota cp1_b = 2.586378599564538 \cdot 10^{-10} \cdot amp$

Then the magnetic vectors associated with the above current potentials are;

(296) $Acp1 := \begin{pmatrix} 0 \\ 0 \\ \iota cp1_a \end{pmatrix} \cdot amp$ $Bcp1 := \begin{pmatrix} \iota cp1_b \\ 0 \\ 0 \end{pmatrix}$ Rotation is: Z into X.

Then inserting the correct dimensional constants into the cross-product of the current potentials above;

(297) $Sys1_{cp} := \frac{\mu_o}{4 \cdot \pi} \cdot (Acp1 \times Bcp1)$ This is the proton triad system outgoing vector potential.

or, $Sys1_{cp} = \begin{pmatrix} 0 \\ 2.30654685963297 \cdot 10^{-19} \\ 0 \end{pmatrix} \cdot newton$

The electron triad vector potential system is now calculated beginning with the statement for the A & B vectors which shall be labeled as Sys2.

(298) $\iota cp2_a := \frac{q_o \cdot V_{LM}}{l_q} \cdot \sin(\theta)$ and, $\iota cp2_b := \frac{q_o \cdot V_{LM}}{r_{n1}} \cdot \sin(\phi)$

where;

$\iota cp2_a = 4.856924749486525 \cdot 10^{-6} \cdot amp$ and $\iota cp2_b = 2.586378599564538 \cdot 10^{-10} \cdot amp$

Then the magnetic vectors associated with the above current potentials are:

(299) $Acp2 := \begin{pmatrix} \iota cp2_a \\ 0 \\ 0 \end{pmatrix} \quad Bcp2 := \begin{pmatrix} 0 \\ 0 \\ \iota cp2_b \end{pmatrix} \cdot amp$ Rotation is: X into Z.

Then again inserting the correct dimensional constants for the electron triad cross-product of the current potentials above;

(300) $Sys2_{cp} := \frac{\mu_o}{4 \cdot \pi} \cdot (Acp2 \times Bcp2)$ This is the electron triad system outgoing vector potential.

or, $Sys2_{cp} = \begin{pmatrix} 0 \\ -1.25618462317673 \cdot 10^{-22} \\ 0 \end{pmatrix} \cdot newton$

Then the total electrogravitational interaction force between a proton and an electron at the r_{n1} orbital of the element Hydrogen is;

(301) $F_{gep} := Sys1_{cp} \cdot \mu_o \cdot Sys2_{cp}$

or, $F_{gep} = -3.641041417148494 \cdot 10^{-47} \cdot newton^2 \cdot \left(\frac{henry}{m} \right)$

Let us now calculate the classical electrogravitational force for the same parameters involving a proton-electron:

(302) $F_G := \frac{G \cdot m_p \cdot m_e}{r_{n1}^2}$ or, $F_G = 3.630609029167211 \cdot 10^{-47} \cdot newton$

The (henry/m) term is a hidden term and is a quantum constant expression and only one Newton term is relevant to normal space measurements that have been made to date. Therefore it is suggested herein that the electrogravitational expression is the more correct one since it contains all the terms that relate to the

total electrogravitational interaction. It is also to be noted that charge polarity is not a factor since a (+) charge going in a given direction has the B field given as conforming to the right- hand rule and thus the force vector potential is in the same direction as a (-) charge going in the same direction as the (+) charge but has the B field going in a direction opposite to the right-hand rule. Thus the charge polarity is arbitrary and only the fact that vector potential forces are based on the right-hand triad system as previously presented need be considered in their calculation.

The above counters one of the common arguments against electromagnetic forces being applicable to the gravitational action due to the fact that the electron-proton force is different than the electron-electron force at the same considered distance using the classical gravitational equation as compared to the fact that the classical electrostatic force equation gives the same force since it is simply based on charge potential which is the same for a proton as it is for an electron. The previously presented equation (291) of this chapter proves that the superposition of a charge (q_o^2) coupled to μ_o over $4*pi*l_q$ yields the mass of the electron exactly where l_q is the classical radius of the electron and where lq is also directly proportional to the Lorentz statement for relativistic length contraction as the electron is approaching the speed of light in free space. Thus mass will increase also as l_q decreases.

I have often read of the curvature of space causing two objects to attract each other wherein the analogy of a bowling ball on a mattress or elastic surface creates a dent in that surface and then if a baseball or golf ball were to also be placed on that same surface in a proximate position to the bowling ball the curvature of the surface

would allow that the smaller mass would roll down towards the larger mass. What is not quite right here is that a force of gravity is being used to explain the curvature of space which is causing a force of gravity. This is moibus band logic that calls for the creation of higher dimensional space to hopefully allow for enough dimensions that will cause the moibus band logic to look like flat space. Again, I very strongly suggest that curved space may well exist but it is the result of the electrogravitational action and not the other way around. Further, the equivalence principle allows for the fact that a spaceship may be perfectly balanced in an orbit suspended between an inertial force and the gravitational force indefinitely but when close analysis is brought to bear it is obvious that the principle of action of the two forces are not the same.

Further, this requires that we consider that in order for a linear acceleration to be the same as a gravitational acceleration we must allow all matter to be expanding so that a constant force be developed between objects already in contact with each other and therefore all objects not touching will also tend to move together. While this is perfectly conceivable in thought, the energy required to do this would be vastly beyond any logical limit. Therefore I present my analysis of what the gravitational action most likely is by utilizing the vector potential cross-product approach as a more reasonable actual mechanism of the gravitational action.