Chapter 10

Applying CFLE Theory to Earth

10.1. Electrical Permittivity Around a Charged Particle and Air by CFLE Theory

In quantum field theory, the magnetic moment of an electron is

$$\mu = -\frac{e}{2m}\sigma \qquad 10\text{-}1\text{-}1$$

This is often written as

$$\mu = -g\frac{e}{2m}\,S \qquad 10\text{-}1\text{-}2$$

with $S = \frac{1}{2}\sigma$ and a gyromagnetic ratio of

$$g = 2 \qquad 10\text{-}1\text{-}3$$

Because of extra magnetic moment interaction

$$\mu = -\frac{e}{2m}(1 + \frac{\alpha}{2\pi})\sigma \qquad 10\text{-}1\text{-}4$$

Therefore, $g = 2 + \frac{\alpha}{\pi}$ 10-1-5

The electron thus has an anomalous magnetic moment $\frac{\alpha}{2\pi}$ in addition to its Dirac magnetic moment. To be precise, the anomalous part is given by

$$\frac{g-2}{2} = (\frac{1}{2})\,(\frac{\alpha}{\pi}) - 0.32848 + (1.49 \pm 0.2)(\frac{\alpha}{\pi})^3$$

$$= (1159655.4 \pm 3.3) \times 10^{-9}$$

Current predicted value is

$$a = 0.00115965218(178) \qquad 10\text{-}1\text{-}6$$

The experimental value of the electron's anomalous magnetic moment is

$(\frac{g-2}{2})_{\text{exp}} = (1159657.7 \pm 3.5) \times 10^{-9}$

Current experimental value is

a = 0.00115965218073 10-1-7

which is in excellent agreement with the prediction of Eq. 10-1-6. This is a triumph of QED. Such a successful prediction implies that the anomalous magnetic moment occurs essentially by a different electrical permittivity of the electron around a charged field. The value at $g = 1$ is

a = 0.00115965218073 10-1-8

Recent spectroscopic measurements by Lamb, using a technique of extra accuracy, showed that g = 2.00231930436153. The predicted value of $g = 2$ is a success of the Dirac equation. From the viewpoint of CFLE theory, g = 2.00231930436153 means that

$$\frac{g_{\text{Lamb}}}{g} = \frac{2.002319}{2} = 1.0011595 \qquad 10\text{-}1\text{-}9$$

This value is at $g = 1$.

Feynman diagram of this process is

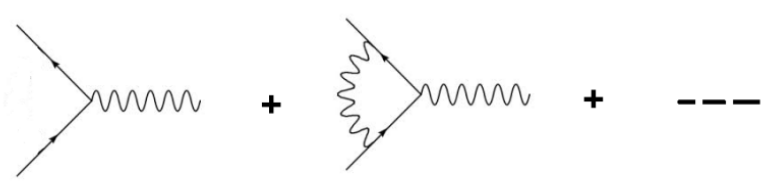

Figure 10-1-1

Second term shows that anomalous term occur by action between part of electron's field and another part of electron's field.

Therefore, anomalous magnetic term can be analyzed electric property of electron's field especially by electric permittivity of field.

Because each electromagnetic spin can be separate two component of gravito-magnetic spin as figure 10-1-2

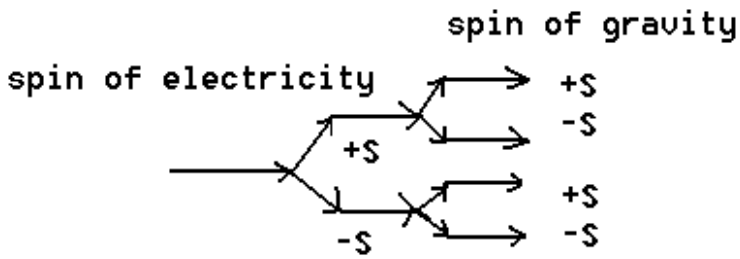

Figure 10-1-2

Therefore, the possible electric permittivity of correspondence field of strong gravitation on Earth's surface (Earth is gravitational electron) is

$$Q_e = \frac{1.00115965 - 1}{2} = 0.000579825 \qquad 10\text{-}1\text{-}10$$

However, electrical permittivity of air at $g = 2$is

$$Q_e = 0.000589 \times 2 = 0.001178,\ x_e = 1.001178$$

Therefore, electrical permittivity around the particle is

$$Q_e = \frac{0.000579825}{1.001178} = 0.000579143$$

This value is only the electrical permittivity around the particle. Thus, this value is seen to be 0.000579 by QED. Therefore, we can confirm that the anomalous magnetic moment of an electron occurs because of a different electrical permittivity around the particle created by its charged field.

10.2 Gravitational Permittivity of Air by CFLE Theory

The standard temperature of standard air is $T = 0°C$.

The standard pressure of standard air is P_o = 760 mmHg.

Standard gravity is g_o = 9.80665 cm/s^2.

The standard density of standard air is ρ_a = 0.0012928 g·cm^2.

The molecular weight of standard air is

M_a = 28.9700 10-2-1

Now, because the mass of a quantized electrical charge is 1 mass unit, the possible gravitational permittivity of air is

Q_g = (0.000579) (28.9700) = 0.016774

x_g = 1.016774 10-2- 2

Quantity of electrical field property of$Q_e = 0.000579$ in EQ 10-1-10 can be quantized as much as curve of force line $g = 6.545979$. However, because Earth EGM factor $c = 1.5$ (cf. § 5, § 17, § 19), maximum curve can be $g = \frac{6.545979}{1.5} = 4.363986$, therefore possible minimum value of $Q_e = 0.000579$ on Earth per unit mass is

$$Q_{e\ mini} = \frac{0.000579}{(6.545979)(4.363986)} = 0.000020 \qquad 10\text{-}2\text{-}3$$

Because molecular weight of air is 28.9700 is, possible electrical permittivity of air is

$$Q_{eair} = (0.000020)(28.9700) = 0.000579 \qquad 10\text{-}2\text{-}4$$

The possible electrical permittivity of air is

Q_e = (0.000579) (1.016774) = 0.000589

x_e = 1.000589 10-2-5

The observed value is

x = 1.00058986$\pm$0.00000050(at STP, for 0.9 MHz) 10-2-6

However, reversely 28.96 mass units of a quantized electrical charge is 1 mass unit for weak force, maximum permittivity of air for weak force is,

$Q_W = 0.000589 / 28.9700 = 0.000020$

$x_W = 1.000020$ 10-2-7

Because the predicted value correlates well with the observed value, we can have the assurance that the analysis in §10.1 is right.

Conclusion: Earth is correspond astronomical electron according to correspondence principle of CFLE theory, because anomalous of $\frac{1}{2}$magnetic moment of electron is same as electrical permittivity of air of Earth's surface.

10.3 Gravitational Permittivity of Seawater by CFLE Theory

The molecular weight of water (H_2O) is

$M_w = (1.0080 \times 2) + 15.9994$

$= 18.0154$

$Q_g = (0.000589)\ (18.0154) = 0.010611$

$x_g = 1.010611$ 10-3-1

Because the average density of seawater is $\rho_s = 1.0256$, the gravitational permittivity of seawater is

$Q_{g\ seawater} = (0.010611)\ (1.0265) = 0.010892$

$x_{g\ seawater} = 1.010892 = 1.011$ 10-3-2

10.4 Theoretical Predictions of the Mass of the Muon and its *g*-Factor from QED by CFLE Theory

The quark model's predicted value of the magnetic moment ratio between a proton and a neutron is

$\frac{\mu_n}{\pi_p} = -\frac{2}{3} = -1.5$ 10-4-1

The experimental value is

$\frac{\mu_n}{\mu_p} = -0.68497945 \pm 0.00000058 = 1.45989781$ 10-4-2

The predicted value by CFLE theory is

$$\frac{\mu_n}{\mu_p} = -0.683441 \qquad 10\text{-}4\text{-}3$$

Between the predicted and experimental values, any difference should occur only by gravitational permittivity. Because such analysis is allowed by CFLE theory, the difference is

$$dQ = \frac{-0.684979}{-0.683441} = 1.002250 \qquad 10\text{-}4\text{-}4$$

The force line curve of this permittivity is

$$g = \frac{0.002250}{0.000589} = 3.820 \qquad 10\text{-}4\text{-}5$$

Because the maximum electrical permittivity of air at $g = 1.5 \times 8$ is

$Q_e = (0.000589)\ (12) = 0.007068$

$x_e = 1.007068$

the effective expected value is

$$g = \frac{3.820}{1.007068} = 3.793 \qquad 10\text{-}4\text{-}6$$

The particle mass of such force line curve is

$$M_e = g^4 m_e = (3.793)^4 m_e$$

$$= 206.98 m_e \qquad 10\text{-}4\text{-}7$$

Because the electrical permittivity of normal air is

$x_e = 1.000589$

the effective mass is

$$M_e = \frac{206.98}{1.000589} = 206.86$$

$206.86 M_e \Longrightarrow$ mass of muon $= 206.85 M_e = 105.7$ MeV

Because the theoretical value agrees well with the observed value, we can get here assurances about CFLE theory.

10.5 Theoretical Deduction of the Gravitational Constant *G* from ε_o by CFLE Theory

The gravitational constant appears in Newton's law of universal gravitation, but it was not measured until 1798 (71 years after Newton's death) by Henry Cavendish. Cavendish measured the G implicitly, using a torsion balance invented by the geologist Rev. John Michell. He used a horizontal torsion beam with lead balls, the inertia of which he could tell by timing the beam's oscillation. Their faint attraction to other balls placed alongside the beam was detectable by the deflection it caused. However, it is worth mentioning that the aim of Cavendish was not to measure the gravitational constant but rather to measure the mass and density relative to water of Earth through the precise knowledge of the gravitational interaction. The value that he calculated, in SI unit, was

$$G = 6.754 \times 10^{-11}\ \mathrm{m^3/kg \cdot s^2}$$

The accuracy of the measured value of *G* has increased only modestly since the original experiment of Cavendish. *G* is quite difficult to measure, as gravity is much weaker than other fundamental forces, and an experimental apparatus cannot be separated from the gravitational influence of other bodies. Furthermore, gravity has no established relation to other fundamental forces, so it does not appear possible to measure it indirectly. The published values of *G* have varied broadly, and some recent measurements of high precision are, in fact, mutually exclusive. Table 10-5-1 shows how wide the range of uncertainty degree in measurements of *G* is, and despite the advancement of measurement technique in the past 200 years, the results surprisingly have not changed much from the measurements of 200 years ago.

Given such a wide range of uncertain values of *G*, it is unavoidable that this would cause serious problems for modern space projects. Because the sun's mass is $\sim 10^{30}$ kg, the error range from the uncertain G can be as huge as $\sim 10^{28}$ kg to $\sim 10^{23}$ kg. This huge error poses a big risk factor for execution of space projects. However, CFLE theory can deduce *G* principally from ε_o, G_o, and I_o by using the fact that gravity is qualitatively the same as electricity. For the theoretical deduction of *G*, we first need to analyze the dimension of ε_o and *G*. That is,

$$\varepsilon_o = \mathrm{AS/Vm} = \mathrm{s^2 \cdot q^2/m^2 \cdot mkg} \qquad 10\text{-}5\text{-}1$$

$$G = m^2 \cdot mkg/s^2 \cdot kg^2 \qquad 10\text{-}5\text{-}2$$

where s is seconds, q is the electric charge, m is meters, and kg is the mass in kilograms. Now, According to CFLE theory, we can change the dimension of ε_o to G. That is,

$$\frac{1}{\varepsilon_o} = m^2 \cdot mkg/s^2 \cdot q^2 \qquad 10\text{-}5\text{-}3$$

However, because mass is a very weak electrical charge, according to CFLE theory, the q^2 of ε_o can be changed to kg^2 of G by using the conversion constant determined in §4.3.1. That is,

$$q^2(Tr)^2 = kg^2 \qquad 10\text{-}5\text{-}4$$

The dimension change of $\frac{1}{\varepsilon_o}$ into G_o is

$$\frac{1}{\varepsilon_o} = m^2 \cdot mkg/s^2 \cdot q^2 \leftarrow Tr \rightarrow m^2 \cdot mkg/s^2 \cdot kg^2 = G_o \qquad 10\text{-}5\text{-}5$$

Therefore,

$$G_o = \frac{1}{\varepsilon_o} \frac{1}{(Tr)^2} \qquad 10\text{-}5\text{-}6$$

Table 10-5-1. Range of Values for *G* collected between 1798 and 2004.

Data Set number	Author	Year	G ($\times 10^{-11}$ $m^3Kg^{-1}s^{-2}$)	Accuracy	% Deviation from CODATA
1	Cavendish H.	1798	6.74	±0.05	+0.986
2	Reich F.	1838	6.63	±0.06	-0.662
3	Baily F.	1843	6.62	±0.07	-0.812
4	Cornu A, Baille J.	1873	6.63	±0.017	-0.662
5	Jolly Ph.	1878	6.46	±0.11	-3.209
6	Wilsing J.	1889	6.594	±0.015	-1.202
7	Poynting J.H.	1891	6.70	±0.04	+0.387
8	Boys C.V.	1895	6.658	±0.007	-0.243
9	Eotvos R.	1896	6.657	±0.013	-0.258
10	Brayn C.A.	1897	6.658	±0.007	-0.243
11	Richarz F. & Krigar-Menzel O.	1898	6.683	±0.011	+0.132
12	Burgess G.K.	1902	6.64	±0.04	-0.512
13	Heyl P.R.	1928	6.6721	±0.0073	-0.031
14	Heyl P.R.	1930	6.670	±0.005	-0.063
15	Zaradnicek J.	1933	6.66	±0.04	-0.213
16	Heyl P.,Chrzanowski	1942	6.673	±0.003	-0.018
17	Rose R.D. et al.	1969	6.674	±0.004	-0.003
18	Facy L., Pontikis C.	1972	6.6714	±0.0006	-0.042
19	Renner Ya.	1974	6.670	±0.008	-0.063
20	Karagioz et al	1975	6.668	±0.002	-0.093
21	Luther et al	1975	6.6699	±0.0014	-0.064
22	Koldewyn W., Faller J.	1976	6.57	±0.17	-1.561
23	Sagitov M.U. et al	1977	6.6745	±0.0008	+0.004
24	Luther G., Towler W.	1982	6.6726	±0.0005	-0.024
25	Karagioz et al	1985	6.6730	±0.0005	-0.018
26	Dousse & Rheme	1986	6.6722	±0.0051	-0.030
27	Boer H. et al	1987	6.667	±0.0007	-0.108
28	Karagioz et al	1986	6.6730	±0.0003	-0.018
29	Karagioz et al	1987	6.6730	±0.0005	-0.018
30	Karagioz et al	1988	6.6728	±0.0003	-0.021
31	Karagioz et al	1989	6.6729	±0.0002	-0.019

Table 10-5-1 (*continued*)

32	Saulnier M.S., Frisch D.	1989	6.65	±0.09	-0.363
33	Karagioz et al	1990	6.6730	±0.00009	-0.018
34	Schurr et al	1991	6.6613	±0.0093	-0.193
35	Hubler et al	1992	6.6737	±0.0051	-0.008
36	Izmailov et al	1992	6.6771	±0.0004	+0.043
37	Michaelis et al	1993	6.71540	±0.00008	+0.617
38	Hubler et al	1993	6.6698	±0.0013	-0.066
39	Karagioz et al	1993	6.6729	±0.0002	-0.019
40	Walesch et al	1994	6.6719	±0.0008	-0.035
41	Fitzgerald & Armstrong	1994	6.6746	±0.001	+0.006
42	Hubler et al	1994	6.6607	±0.0032	-0.202
43	Hubler et al	1994	6.6779	±0.0063	+0.055
44	Karagioz et al	1994	6.67285	±0.00008	-0.020
45	Fitzgerald & Armstrong	1995	6.6656	±0.0009	-0.129
46	Karagioz et al	1995	6.6729	±0.0002	-0.019
47	Walesch et al	1995	6.6685	±0.0011	-0.085
48	Michaelis et al	1996	6.7154	±0.0008	+0.617
49	Karagioz et al	1996	6.6729	±0.0005	-0.019
50	Bagley & Luther	1997	6.6740	±0.0007	-0.003
51	Schurr, Nolting et al	1997	6.6754	±0.0014	+0.018
52	Luo et al	1997	6.6699	±0.0007	-0.064
53	Schwarz W. et al	1998	6.6873	±0.0094	+0.196
54	Kleinvoss et al	1998	6.6735	±0.0004	-0.011
55	Richman et al	1998	6.683	±0.011	+0.132
56	Luo et al	1999	6.6699	±0.0007	-0.064
57	Fitzgerald & Armstrong	1999	6.6742	±0.0007	±0.01
58	Richman S.J. et al	1999	6.6830	±0.0011	+0.132
59	Schurr, Noltting et al	1999	6.6754	±0.0015	+0.018
60	Gundlach & Merkowitz	1999	6.67422	±0.00009	+0.0003
61	Quinn et al	2000	6.67559	±0.00027	+0.021
--	**PRESENT CODATA VALUE**	**2004**	**6.6742**	**±0.001**	**±0.0150**

But, $\varepsilon_o = 8.854188 \times 10^{-12}$ AS/Vm

$1/Tr = 1.043153 \times 10^{-10}$ C/kg from Eq. 4-3-1

Hence,

$$G_o = \frac{1}{\varepsilon_o}\left(\frac{1}{\mathrm{Tr}}\right)^2$$

$$= (1.129409 \times 10^{11})\,(1.088168 \times 10^{-20})$$

$$= 122.8987 \times 10^{-11}\ \mathrm{m^2{\cdot}mkg/s^2{\cdot}kg^2} \qquad 10\text{-}5\text{-}7$$

But, because the difference square factor between electricity and gravity is

$$g = \frac{6.545979}{1.5} = 4.363986 \qquad 10\text{-}5\text{-}8$$

where 1.5 is the factor of correspondence number $C_c = 1.5$,

$$g^2 = (4.363986)^2$$

$$= 19.044374 \qquad 10\text{-}5\text{-}9$$

Therefore, the effective value of G_o is

$$G_o = \frac{122.8987 \times 10^{-11}}{19.044374}\ \mathrm{m^2{\cdot}mkg/s^2{\cdot}kg^2}$$

$$= 6.453281 \times 10^{-11}\ \mathrm{m^2{\cdot}mkg/s^2{\cdot}kg^2} \qquad 10\text{-}5\text{-}10$$

This theoretical value is the gravitational constant in a vacuum by CFLE theory.

Because $c_s^2 = G_o I_o$ by CFLE theory; therefore,

$$I_o = \frac{{c_s}^2}{G_o}$$

$$= \frac{(2.99792458 \times 10^8\ \mathrm{m/s})^2}{6.453281 \times 10^{-11}\ \mathrm{m^2{\cdot}mkg/s^2{\cdot}kg^2}}$$

$$= 1.392710 \times 10^{27}\ \mathrm{kg/m} \qquad 10\text{-}5\text{-}11$$

Now, we can obtain the usual gravitational constant in standard air (Newton's constant):

$$G = G_o x_1 x_2 x_3 \qquad 10\text{-}5\text{-}12$$

where x_1 is the gravitational permittivity of air at $g = 2$ of Earth surface.

That is

$$Q_g = 0.016774 \times 2$$

$$= 0.033548$$

$$x_{1air} = 1.033548 \qquad 10\text{-}5\text{-}13$$

x_2 is the electrical permittivity of air at $g = 1$. That is

$$x_{2air} = 1.000589 \qquad 10\text{-}5\text{-}14$$

x_3 is the permittivity of air at g=1 for weak force.

$$x_{3air} = 1.000020$$

$$0.000020 = \frac{0.000589}{28.97} \qquad 10\text{-}5\text{-}15$$

The theoretical value of Newton's constant G (Eq. 10-5-12) is thus

$$G_{air} = (6.453281 \times 10^{-11}\ \mathrm{m^2 \cdot mkg/s^2 \cdot kg^2})(1.033548)(1.000589)(1.000020)$$

$$= 6.673838 \times 10^{-11}\ \mathrm{m^2 \cdot mkg/s^2 \cdot kg^2} \qquad 10\text{-}5\text{-}16$$

The observed value by CADATA recommended value of 2010 is

$$G = 6.67384(80) \times 10^{-11}\ \mathrm{m^2 \cdot mkg/s^2 \cdot kg^2}$$

With this theoretical deducing of G, we can theorize that the variety in measurements of the past 200 years is caused by changes of the gravitational permittivity of air, the electrical permittivity of air, and the gravitational permittivity of Earth. Therefore, we can use the theoretical prediction of G in research whenever there appears a wide range of differences in the gravitational and electromagnetic properties of the atmosphere and Earth.

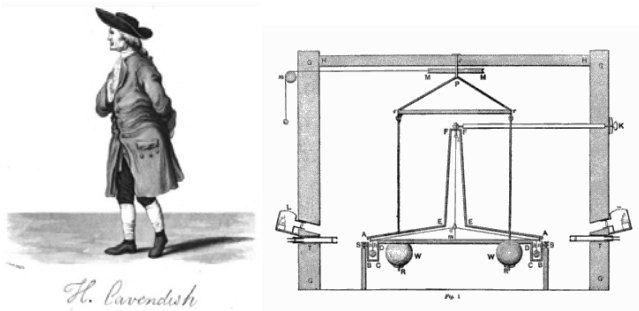

Figure 10-5-1

10.6 Gravitational Permittivity of Earth

The 4 component elements of Earth are oxygen (O), magnesium (M), silicon (Si), and iron (Fe). The molecular weight of the component particles is

$$W = O + M + Si + Fe$$

$$= 15.999 + 24.305 + 28.086 + 55.847$$

$$= 124.237$$

$$\approx 124 \qquad 10\text{-}6\text{-}1$$

Because the gravitational permittivity around a unit particle is $x = 1.000579$, the gravitational permittivity of Earth is

$$Q_g = (0.000579)\,(124.237) = 0.073176$$

$$x_g = 1.073176 \qquad 10\text{-}6\text{-}2$$

10.7 Solving the Old Riddle of Wind Waves by CFLE Theory

In fluid dynamics, wind waves (or, more precisely, wind–generated waves) are surfaces that occur on the free surface of oceans, seas, lakes, rivers, and canals, and even on small puddles and ponds. Wind waves usually result from the wind blowing over a vast enough stretch of fluid surface. The exact mechanism by which this occurs has been difficult to explain quantitatively, and it is still not completely understood to this day. The year 1871 saw the start of Kelvin's theoretical research about wave generation, and in 1890 this mechanics was generalized by H. von Helmholtz. According to this theory, wind blows over the fluid surface even without friction, and generates a wave over a critical wind

speed. Therefore, this theory is called the "theory of instability or theory of Kelvin–Helmholtz instability (KHI)." In the KHI mechanics, speed is

$$V = \sqrt{\frac{g\lambda}{2\pi}\tanh\left(\frac{2\pi d}{\lambda}\right)} \qquad 10\text{-}7\text{-}1$$

where λ is the wavelength, d is the water depth, and g is the acceleration due to gravitation at the Earth surface. According to this general formula of KHI mechanics, the minimum wind speed required for the water wave is

V_p = 670 cm/s

However, the real observation by H.U. Roll at the German coast in 1951 was

V_o = 69.5 cm/s

The discrepancy between the two values is

$$D = \frac{V_p}{V_o} = \frac{670\ \text{cm/s}}{69.5\ \text{cm/s}}$$

$$= 9.64 \qquad 10\text{-}7\text{-}2$$

About 60 years has passed since this disagreement was recognized, and this seemingly old and trifling problem that no one wants to pay attention to has not been solved by any present mechanics. And yet, it is a very important problem. From the viewpoint of CFLE theory, here are two important defects to this issue. First, in KHI mechanics, there is no consideration about the gravitational permittivities of air and of the seawater. Second, KHI mechanics also does not consider the force line curve g. According to the discussion in §10, the gravitational permittivity value of air is $x_{g\ air}$ = 1.016774 and that of seawater is $x_{g\ sea}$ = 1.010892.

The gravitational permittivity difference of these two substances is

$$\frac{Q_{air}}{Q_{sea}} = \frac{0.016774}{0.010892}$$

$$= 1.540029 \qquad 10\text{-}7\text{-}3$$

The meaning of this difference is that when air moves as wind, its influence over water is more than 1.5 times stronger than that calculated by KHI mechanic. Therefore, even though wind blows $(1.540029\ )^2$ times slower, it can still influence water enough for a wave to be generated, according to CFLE theory. As discussed in §7, the maximum force line curve of component particles of air and seawater is $g = 2$. Therefore, the force that is changed by this factor of g is

$$F' = F \cdot g^2 = 4F' \qquad 10\text{-}7\text{-}4$$

Therefore, the effective difference is

$$d = (1.540)^2(2)^2$$

$$= 9.486 \qquad 10\text{-}7\text{-}5$$

The gravitational permittivity of seawater (cf. §10.3) is

$$x_{\text{g sea}} = 1.010892$$

For the force of this permittivity,

$$x^2_{\text{g sea}} = 1.021093 \qquad 10\text{-}7\text{-}6$$

The electrical permittivity of air of $g = \frac{6.545979}{1.5} = 4.363986$ is

$$Q_e = (0.000589)\ (4.363986) = 0.002570$$

$$x_e = 1.002570$$

For the force of this permittivity,

$$x_e^2 = 1.005147$$

Therefore, the total difference is

$$D = \frac{(9.486)(1.021093)}{1.005147} = 9.636$$

$$= 9.64 \qquad 10\text{-}7\text{-}7$$

This result shows two important facts. Firstly, that H. U. Roll's experiment was correct. Secondly, that CFLE theory is correct.

Thus, the expected wind speed by CFLE theory is

$$V = \frac{670\ \text{cm/s}}{9.64}$$

$$= 69.5\ \text{cm/s} \qquad 10\text{-}7\text{-}8$$

in excellent agreement with Roll's observation.

10.8 Component of Earth's Magnetic Force Line and Its Origin

When Earth rotates, the electrical field and magnetic field from the proton mass and electron mass offset the electrical charge of the proton and electron, giving neutralization to zero. Therefore, the proton mass cannot influence Earth's magnet. On the other hand, the neutron mass definitely influences Earth's electrical and magnetic fields; because the neutron's electric charge is zero. But, because a neutron has a $-\frac{2}{3}$ quark magnetic moment, it can be only influence Earth's magnet by a factor of $\frac{1}{1.464}$ = 0.683. This situation can be expressed by Figure 10-8-1.

Figure 10-8-1

The arrow in the figure shows the rotating direction and mass currents, like the charge currents in electrodynamics. This mass current generates a mass magnetic field or gravitomagnetic field, as illustrated in Figure 10-8-2.

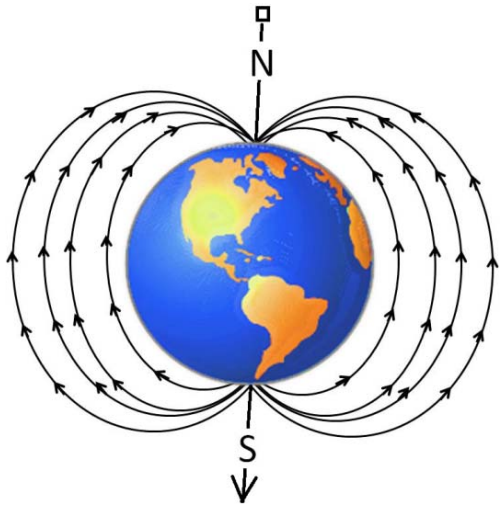

Figure 10-8-2

This gravitomagnetic field can have two different directions of spin magnetic fields (Figure 10-8-3).

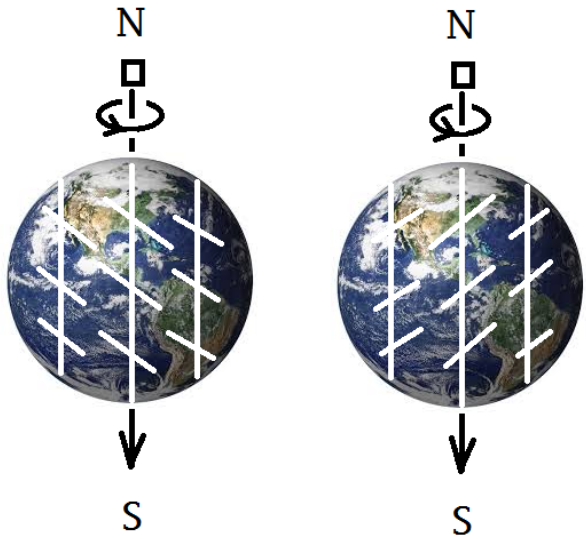

Figure 10-8-3

This spin magnetic field can be expressed only as a transversal component, as shown in Figure 10-8-4.

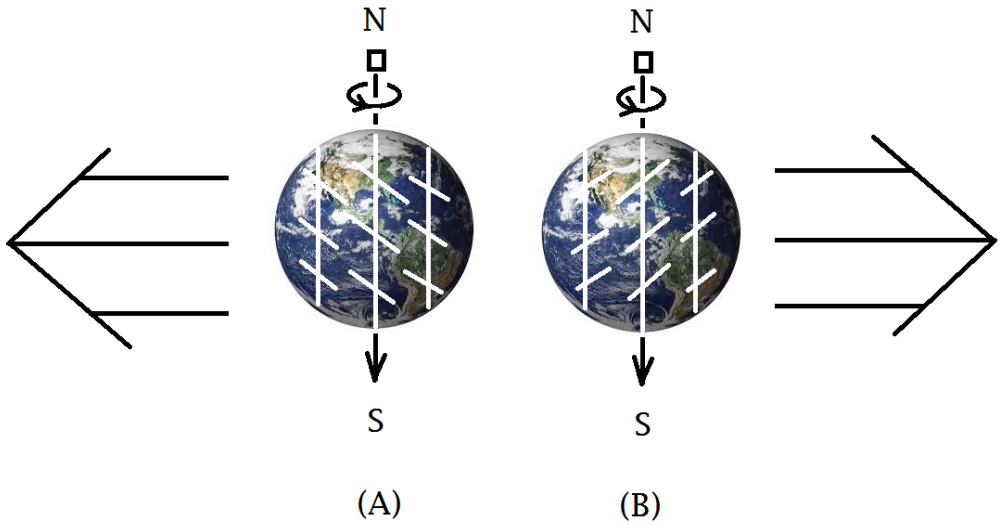

Figure 10-8-4

This result shows that a spin magnet can have only two effects; a positive mass current (same direction of rotation) or a negative mass current (anti direction of rotation). In other words, essentially a positive effect (Figure 10-8-4(B)) or a negative effect (Figure 10-8-4A)). When (A) prevails, we have a reversed Earth magnet, despite that Earth rotates in the same direction. When (B) prevails, Earth's magnet is strengthened. As discussed in §5, when the revolution radius of Earth is changed, so too is (A) or (B). According to this change, the energy in Earth's magnet is emitted or absorbed as heat energy. This heat energy change, as mentioned in §5, is connected to the Ice Age changes. Moreover, as discussed in §5, the number N = 1.154 results from the ratio between the neutron number and proton number of the iron nucleus of Earth's core. That is,

$$\text{P:N} = 30:26, \quad \frac{30}{26} = 1.154 \qquad 10\text{-}8\text{-}1$$

The iron atom plays an important role globally because of its mass and the special properties of its energy level.

Conclusion: Present Earth magnetic polarity is essentially reversal polarity as (A) of figure 10-8-4, because rotation direction of Earth and field line direction of Earth is not agreed.

10.9. The Real Form of Every Force Line Element in CFLE Theory

In §4, I used two hexahedrons as two force line elements to indicate clearly a perpendicular force (any static force) and a neutrolateral force, and to clearly express the ratio of these two forces, as in Figure 10-9-1.

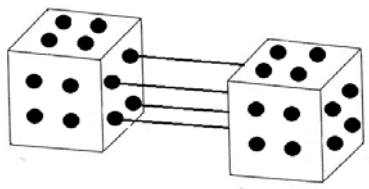

Figure 10-9-1

The real force line elements of every force, however, are of spherical form (Figure 10-9-2).

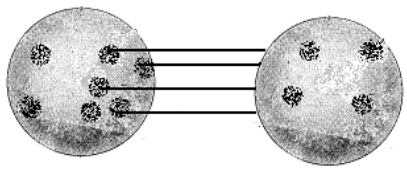

Figure 10-9-2

Figure 10-9-3 shows this when expressed only with cross-sections.

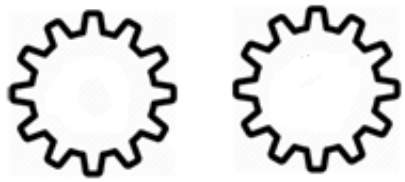

Figure 10-9-3

However, the linearity of the force line for a perpendicular force and a neutrolateral force does not change, because according to gauge symmetry, interactions between force line elements do not permit divergence of both force lines (Figure 10-9-4).

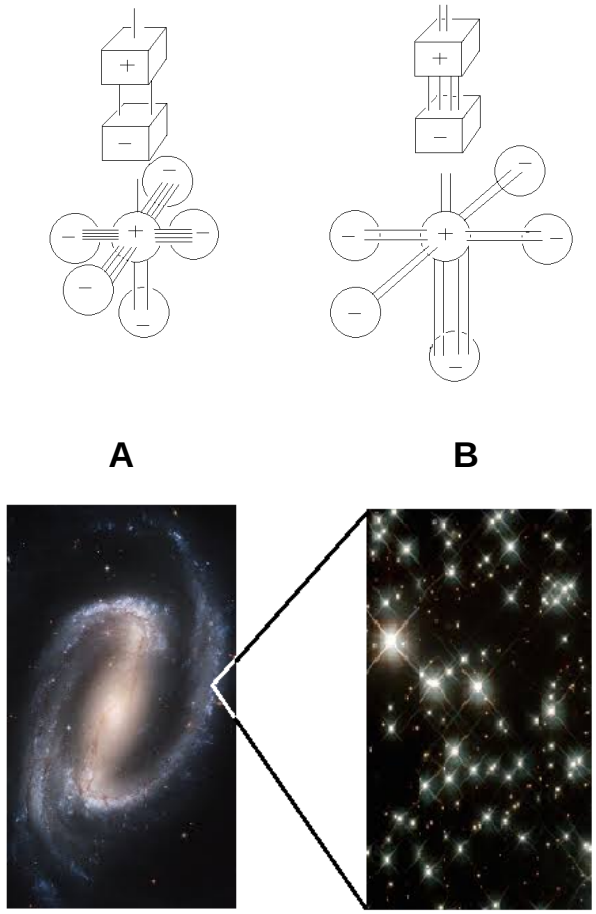

Figure 10-9-4

Figure 10-9-4A shows the interaction between near-neighbor force line elements and main force line elements. Because the distant between the neighbor force line elements and main force line elements is short, many force lines can join interactions with neighbor force line elements. Therefore, the force lines for a perpendicular force are few. Figure 10-9-4-B shows the interaction between neighbor force line elements and main force line elements that are far apart. In this case, only a few force lines join interactions with neighbor force line elements. Therefore, the force lines of a perpendicular force are many. Such interaction between neighboring dipolar force line elements is called charge screening control interaction (CSCI). By CSCI, the changed momentum $\frac{\hbar}{2\pi i}(i\psi^* \frac{d\Lambda(x)}{dx}\psi)$ can be absorbed in order to maintain gauge symmetry. Therefore, every force line can run without divergence, in the same way as from hexahedron force line elements (cf. §5 and §6).

10.10 Obtaining the Maximum Age of a Stellar Universe by CFLE Theory

Earth's age by meteorites is

$T = 4.5682 \times 10^9$ years 10-10-1

According to CFLE theory, the maximum possible start of such system can be expected at $g = 2$, $c_c = 1.5$.

Therefore, the possible maximum age of such system, which can be called the atomic world, is

$T = (4.5682 \times 10^9 \text{ years})\ (2)\ (1.5)$

$= 1.3705 \times 10^{10}$ years 10-10-2

Because the maximum electrical permittivity of air at $g\ c_c = (8)(1.5) = 12$ is

$Q_e = (0.000589)\ (12) = 0.007068$

$x_e = 1.007068$

the effective age is

$T = (1.3705 \times 10^{10} \text{ years})\ (1.007068)$

$= 1.3802 \times 10^{10}$ years

$= 13.802$ billion years 10-10-3

Observed value by WMAP 2012 is

$T = 13.772 \pm 0.059 \times 10^9$years 10-10-4

Observed value by PLANCK 2015 is

$T = 13.813 \pm 0.038 \times 10^9$years 10-10-5

This theoretical maximum value is for a gravitational system like the sun and the stars in general, where such system is formed by elements that have only 4 kinds of force lines and only 4 kinds of force line elements.