A Strong, Weak, and Magnetic Force Equivalance
(In The n1 Orbital of Hydrogen)

Introduction:

There exists at the Bohr radius a condition where the magnetic, strong and weak forces approach each other in magnitude. When this occurs, the natural number e and π appear in the ratios of the forces near the R_{n1} radius points. This phenomona is graphed below. The force equations used are those developed in a previous paper, "A New Electrostatic Field Geometry" by this author.

Statement of relavant constants.

$f_{LM} := 1.003224805 \cdot 10^{1}$ Least quantum frequency, in Hz.

$q_o := 1.602177330 \cdot 10^{-19}$ Electron quantum charge, in coulombs.

$i_{LM} := q_o \cdot f_{LM}$ or, $i_{LM} = 1.607344039464671 \cdot 10^{-18}$ (= Least quantum ampere.)

$R_{n1} := 5.291772490 \cdot 10^{-11}$ Bohr radius of Hydrogen, in meters

$\mu_o := 1.256637061 \cdot 10^{-06}$ Magnetic permeability in Henry/meter.

$\varepsilon_o := 8.854187817 \cdot 10^{-12}$ Dielectric permittivity, in Farad/meter.

$\lambda_{LM} := 8.514995416 \cdot 10^{-03}$ Quantum Magnetic Wavelength, in meters.

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

$c := 2.997924580 \cdot 10^{08}$ Velocity of light in free space, in meters/second.

$r_p := 2.103089322 \cdot 10^{-16}$ Compton radius of proton, in meters.

Let $r'_p := 1.916046 \cdot 10^{-16}$ Adjusted value of proton radius, in meters.

Let the variable radius r_x be stated as: $\Delta r_x := \frac{R_{n1}}{10}, \frac{R_{n1}}{9.9} .. 3 \cdot R_{n1}$

The five forces summarized from the ebook, "Electrogravitation As A Unified Field Theory", by Jerry E. Bayles.

Electrogravitational force

(A) variable weber/meter |----------constant newton----------| (amp) (amp) (A) variable weber/meter

$$FG\left(\Delta r_x\right) := \left(\frac{\mu_o \cdot i_{LM} \cdot \lambda_{LM}}{4\cdot\pi\cdot\Delta r_x}\right)\cdot\left[\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\cdot\mu_o\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\right]\cdot\left(\frac{\mu_o\cdot i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\Delta r_x}\right)$$

Note: (A) = volt * sec / m

Magnetic force

(A) (amp)

$$FM\left(\Delta r_x\right) := \left(\frac{\mu_o\cdot i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\Delta r_x}\right)\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)$$ = newton units.

Weak force

(--- F_{EE} --)

(Volt*m/sec) (---------------- Watt Constant ----------------) (Volt*m/sec) (Nuclear Magnetic Force)

$$FW\left(\Delta r_x\right) := \left[\left(\frac{i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\varepsilon_o\cdot\Delta r_x}\right)\cdot\left[\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\cdot\left[(3)\cdot\sqrt{\frac{\mu_o}{\varepsilon_o}}\right]\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\right]\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\varepsilon_o\cdot\Delta r_x}\right)\right]\cdot\left[\frac{(\pi)^2}{\varepsilon_o}\right]\cdot\left(\frac{\mu_o\cdot i_{LM}{}^2\cdot\lambda_{LM}{}^2}{4\cdot\pi\cdot\Delta r_x{}^2}\right)$$

Electrostatic force

(Volt*m/sec) (------------- Watt Constant -------------) (Volt*m/sec)

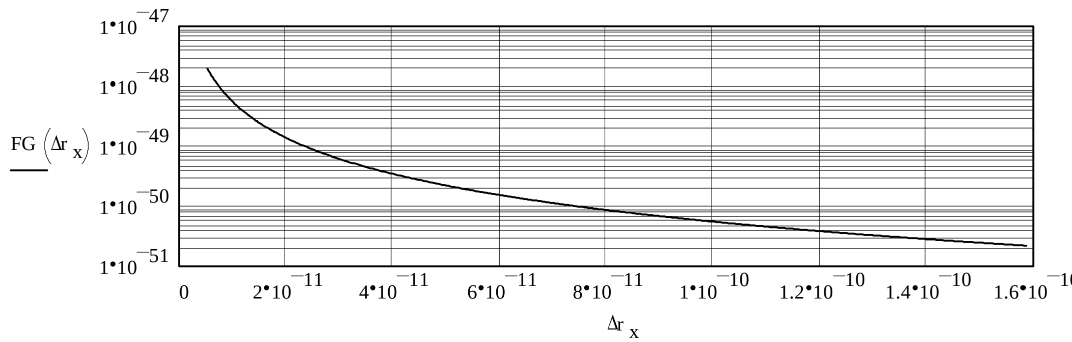
$$FE\left(\Delta r_x\right) := \left(\frac{i_{LM}\cdot\lambda_{LM}}{4\cdot\varepsilon_o\cdot\Delta r_x}\right)\cdot\left[\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\cdot\sqrt{\frac{3\cdot\mu_o}{\varepsilon_o}}\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\right]\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\varepsilon_o\cdot\Delta r_x}\right)$$

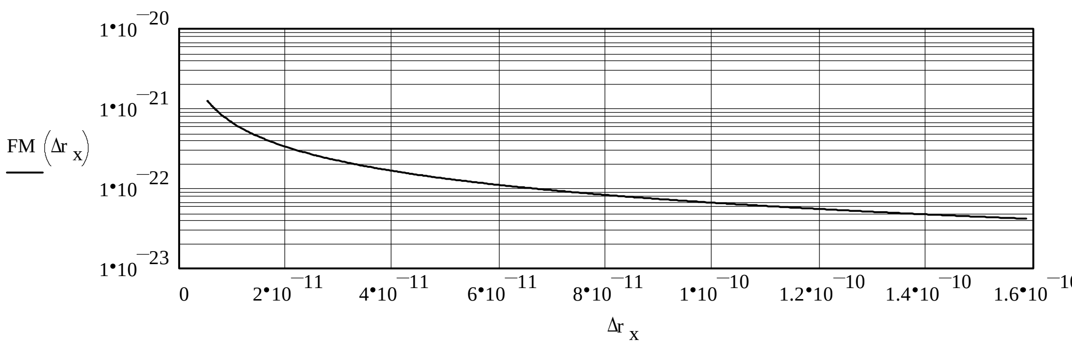
Strong force

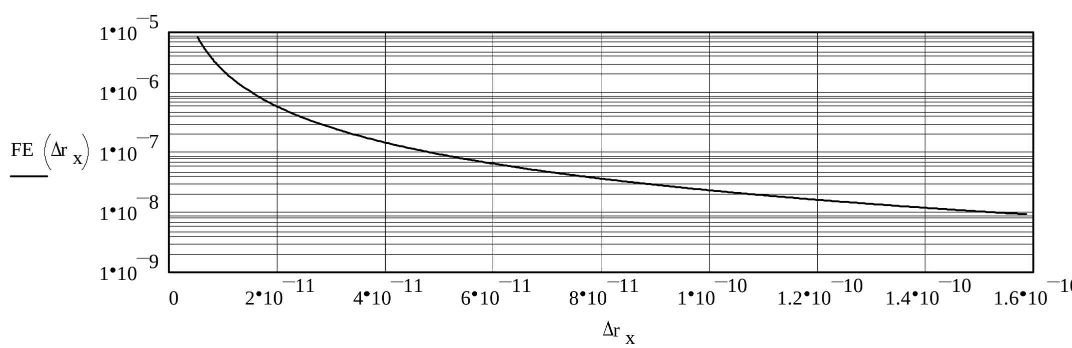
(-- F_{EE} ---)

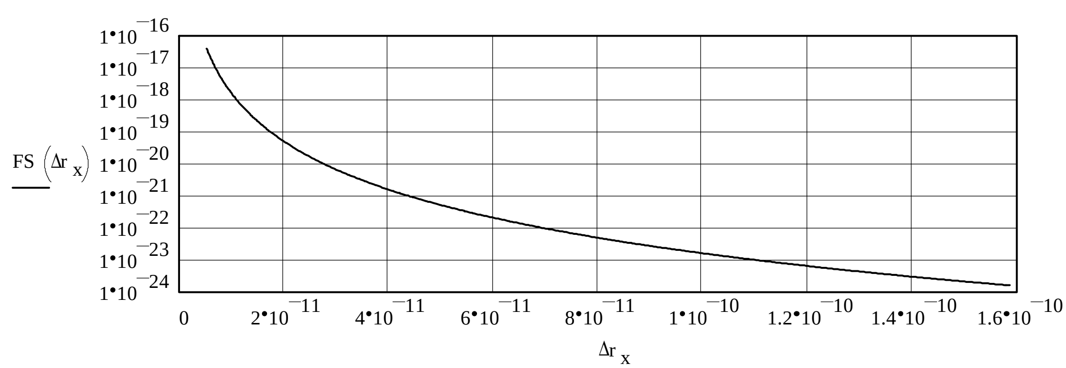
(Volt*m/sec) (------------- Watt Constant -------------) (Volt*m/sec) (Nuclear Magnetic Force)

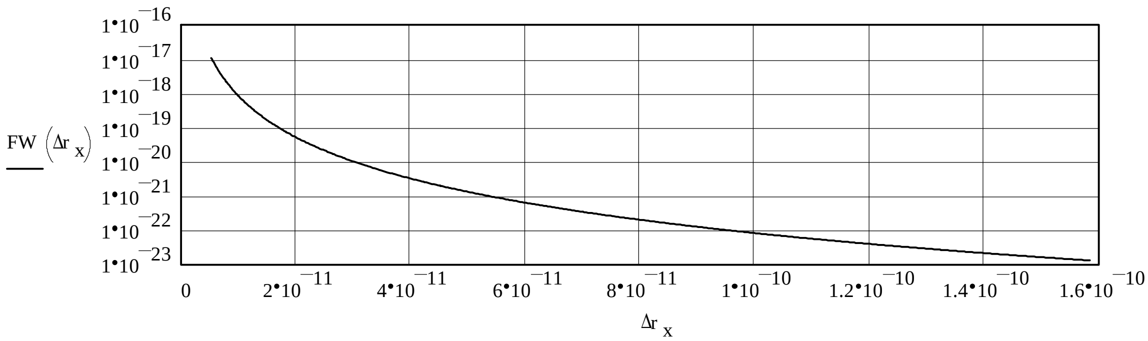
$$FS\left(\Delta r_x\right) := \left[\left(\frac{i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\varepsilon_o\cdot\Delta r_x}\right)\cdot\left[\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\cdot\sqrt{\frac{3\cdot\mu_o}{\varepsilon_o}}\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{l_q}\right)\right]\cdot\left(\frac{i_{LM}\cdot\lambda_{LM}}{4\cdot\pi\cdot\varepsilon_o\cdot\Delta r_x}\right)\right]\cdot\left(\frac{2\cdot\pi\cdot R_{n1}}{\varepsilon_o\cdot\Delta r_x}\right)\cdot\left(\frac{\mu_o\cdot i_{LM}{}^2\cdot\lambda_{LM}{}^2}{4\cdot\pi\cdot\Delta r_x{}^2}\right)$$

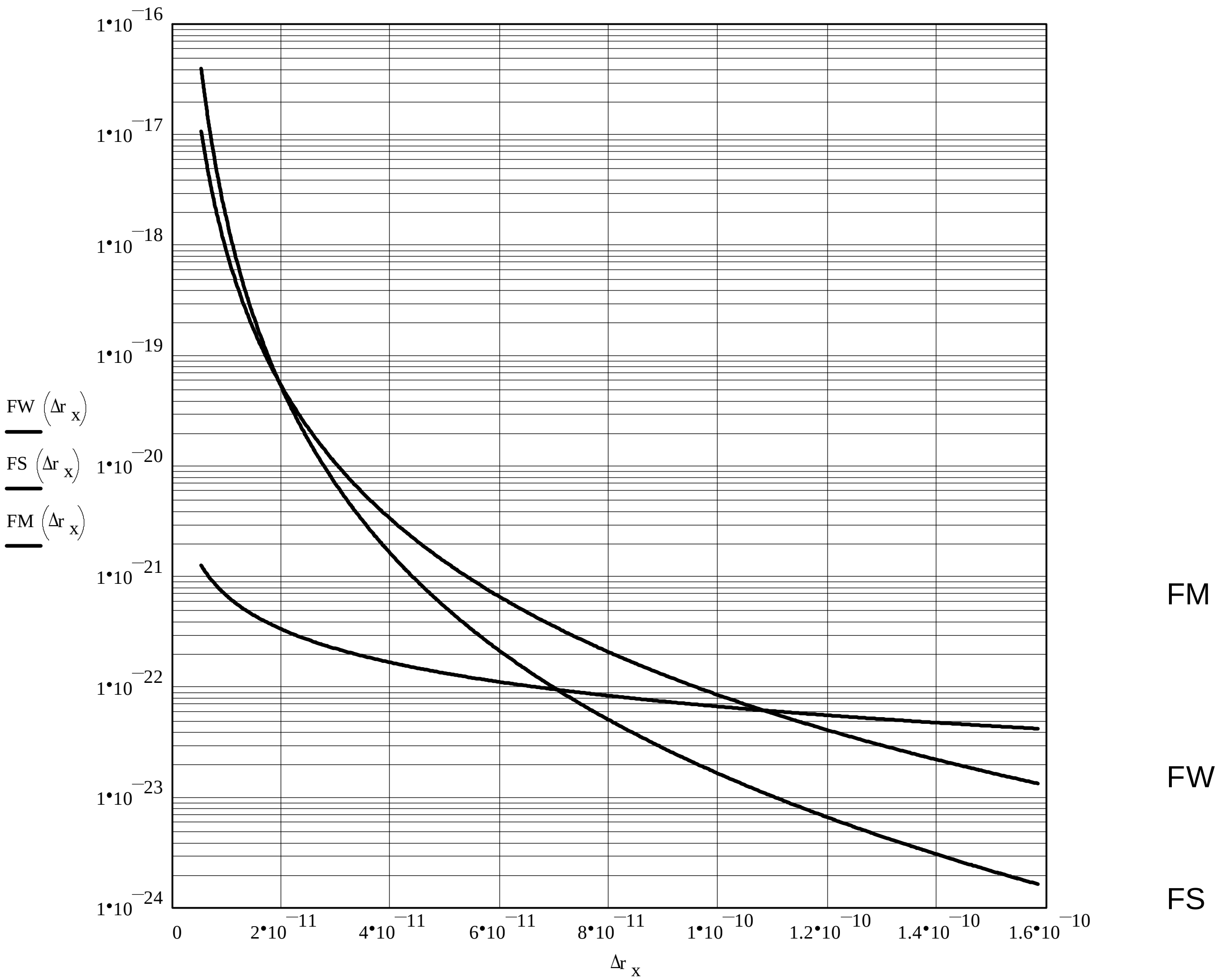

FG (Δr x)
1•10 −47
1•10 −48
1•10 −49
1•10 −50
1•10 −51
0
2•10 −11
4•10 −11
6•10 −11
8•10 −11
1•10 −10
1.2•10 −10
1.4•10 −10
1.6•10 −10
Δr x


FM (Δr x)
1•10 −20
1•10 −21
1•10 −22
1•10 −23
0
2•10 −11
4•10 −11
6•10 −11
8•10 −11
1•10 −10
1.2•10 −10
1.4•10 −10
1.6•10 −10
Δr x


FE (Δr x)
1•10 −5
1•10 −6
1•10 −7
1•10 −8
1•10 −9
0
2•10 −11
4•10 −11
6•10 −11
8•10 −11
1•10 −10
1.2•10 −10
1.4•10 −10
1.6•10 −10
Δr x


FS (Δr x)
1•10 −16
1•10 −17
1•10 −18
1•10 −19
1•10 −20
1•10 −21
1•10 −22
1•10 −23
1•10 −24
0
2•10 −11
4•10 −11
6•10 −11
8•10 −11
1•10 −10
1.2•10 −10
1.4•10 −10
1.6•10 −10
Δr x





Note that if we take the natural log of the quotient of the two ratios of the strong force crossing the weak force divided by where the strong force crosses the magnetic force, the result is very close to π.

-- Jerry E. Bayles --