

Quantum nano-arithmetics for nanotechnology.

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Abstract

Quantum physics is a matrix calculation system that creates a two-dimensional holographic Picture of the three-dimensional harmonic motion of wave fronts. To estimate the fundamental constants of quantum physics with almost unlimited accuracy, only the functional relationships of two transcendental numbers π and e are sufficient with three unique integers $A=137$ (Sommerfeld), $B=602214183$ (Avogadro), $R=105456978$ (Dirac). In fact, quantum physics can be interpreted as a digital computational bridge between continuous and discrete mathematics. In general, quantum physics is the ultimate metric system of the pulsating universe.

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Introduction

The first attempt to develop an absolute metric system was made by Gauss in the early nineteenth century. The attempt was unsuccessful due to the inconsistency of parabolic, elliptic and hyperbolic geometry. Using the inverse logarithmic relations of the transcendental numbers π and e , one can solve this problem if to postulate the number π as the universal unit of space and the number e as the universal unit of time [1,2]. Then the first derivative of π by e is the unit of speed and the second derivative is the unit of acceleration. Geometrically, π is a universal relative perimeter, e is the universal relative diameter of relative space-time. $e/2$ is the universal radius, $4*\pi*(e/2)^2$ is the universal surface, $4/3*\pi*(e/2)^3$ is the universal volume of the sphere, $\pi*(e/2)^2$ - the surface of the universal circle, and $N*(\pi*e^2)/4$ - a discrete set of volumes of universal cylinders. The functional relations between these space-time parameters and an infinite set of integers N determine the computational accuracy of projective geometry in calculation systems with dynamic differential base. The keys to quantum differential calculus are following expressions and the corresponding decimal digital sequences:

$$[\sqrt{(\pi^2+e^2)/2} + (\pi+e)/2 + \sqrt{\pi*e} + 2*\pi*e/(\pi+e)]^2 = 136.9938985020083597$$

$$\ln(\pi) + 59*\ln(10) = 136.9972503724980956$$

$$\text{For any four (a, b, c, d) decimal digits } A = [abcdabcd]/[abcd]/[73] = 137.0000000000000000 = A$$

$$\ln(\sqrt{10}) + 59*\ln(10) = 137.0038130331457184$$

It is an initial self-information (or information entropy) Alpha-matrix that connect decimal and natural calculation systems. Complete inverse alpha-matrix $[A_i]$ and inverse radial matrix $[R_i]$ are derived from the equations of the projective differential geometry. Geometrical parameters of pulsating spiral in inverse polar coordinates [3,4] are identified as following:

$$R_i = 1+2/100*(e+A_i*(1+\sqrt{2*\pi*e/100})) \text{ is relative inverse radii (points of Dirac)}$$

$$A_i = (100*(R_i-1)/2-e)/(1+\sqrt{2*\pi*e/100}) \text{ is relative inverse eccentricities (points of Sommerfeld)}$$

$$P_i = 2*\pi*R_i \text{ is relative inverse perimeters (points of Planck)}$$

$$G_i = P_i*(1+A_i) \text{ is relative densities of perimeters (points of Newton)}$$

$$M_i = 12-[A_i]/10 \text{ is relative amplitudes of pulsations (points of Amagat)}$$

$$K_i = \cos[M_i] - \sin[M_i] \text{ is relative phases of pulsations (points of Boltzmann)}$$

$$N_i = \{\sqrt{8*\pi*e/(8*\pi*e+A^2)}\}/(1+2*[A_i]/1000) - 5/10^8\}/10 \text{ is entropy of eccentricity (points of Avogadro)}$$

$$0.0073189621138002 = (\pi*e/100)^2 + 4*(1/A - (\pi*e/100)^2) = A_4 \text{ is upper parabolic point of eccentricity}$$

$$0.0073187289405399 = 1/(16*\pi*e) = A_H \text{ is upper hyperbolic point of eccentricity}$$

$$0.0060221410732354 = B/(1+4*\pi/(10^8))/10^{11} = N_B \text{ is upper point of entropy of eccentricity}$$

$$0.0073071361524362 = 1/(\ln(e)+59*\ln(10)) = A_L \text{ is upper logarithmic point of eccentricity}$$

$$0.0072992700729927 = 1/A = A_1 \text{ is point of periodical mirror symmetry of eccentricity}$$

$$0.0072973525205056 = 1000/\text{Integer}\{1000*\sqrt{A^2+\pi^2}\} = A_F \text{ is point of fine symmetry of eccentricity}$$

$$0.0072927060593902 = (\pi*e/100)^2 = A_0 \text{ is parabolic point of symmetry of eccentricity}$$

$$0.0072900000000000 = 1/100/\text{Sum}\{[A+(A-100)*N]/10^{(3*N+2)}\} = A_S \text{ is bit-symmetry point of eccentricity}$$

$$1.0545697837673031 = (R+4*\pi*C/(10^{10}))/10^8 = R_C \text{ is upper point of rotational radius}$$

$1.0545697836787944 = (R+1/E)/(10^8) = RE$ is upper point of vibrational radius

$1.0545697836689549 = [R+1/(E+AS)]/(10^8) = RA$ is qubit-point of vibrational radius

$1.0545697836608581 = [R+1/(E+AS+\text{Sum}\{B/10^{(3*N+1)}\})]/(10^8) = RK$ is lower vibrational radius

$0.0070261763632109 = 5/\text{Root}\{X^*E^X/(E^X-1)=5\}-1 = AX$ is lower bound of inverse eccentricity

Unified matrix of standing and travelling waves consists of orbital (A4...AS) and nuclear (AS...AX) parts:

$$A4 = 0.0073189621138002$$

$$NH4 = 0.0060221410039861 = \text{Median}\{NH...N4\}$$

$$AH = 0.0073187289405399$$

$NB = 0.0060221410732354 = B/(1+4*PI/10^8)/10^{11}$ is upper bound of entropy

$NA = 0.0060221410564149 = \text{Median}\{NE...NB\}$ is median point of entropy

$NE = 0.0060221410395944 = \text{Median}\{NLH...NH4\}$ is lower bound of entropy

$$NHL = 0.0060221410752027 = \text{Median}\{NH...NL\}$$

$$AL = 0.0073071361524362$$

$$A1 = 0.0072992700729927$$

$$R01 = 1.0545718610477836 = \text{Median}\{R0...R1\}$$

$$AF = 0.0072973525205056$$
 is fine structure point

$RQ = 1.0545718475783874 = \text{Median}\{RP...R(AF)\}$ is upper bound of gravitational radius

$RP = 1.0545717955420578 = \text{Median}\{R0S...R01\}$ is harmonic orbital radius (reduced Planck's)

$$A0 = 0.0072927060593902$$

$$R0S = 1.0545717300363340 = \text{Median}\{R0...RS\}$$

$AS = 0.0072900000000000 = 1/100/(1.1111111111111111)^3$ is point of qubit symmetry of eccentricity

$$RVS = 1.0545707377551176 = \text{Median}\{RV...RS\}$$

$RG = 1.0545703605282681 = \text{Median}\{RM...RQ\}$ is harmonic center of gravitational radius

$$RC = 1.0545697837673031$$

$$RV = 1.0545697837183468 = \text{Median}\{RT...RC\}$$

$$RE = 1.0545697836787944$$

$$RAE = 1.0545697836738746 = \text{Median}\{RA...RE\}$$

$$RA = 1.0545697836689549$$

$$RT = 1.0545697836693905 = \text{Median}\{RAK...RAE\}$$

$$RAK = 1.0545697836649065 = \text{Median}\{RA...RK\}$$

$$RK = 1.0545697836608581$$

$RM = 1.0545688734791973 = \text{Median}\{RVX...RVS\}$ is lower bound of gravitational radius

$$RVX = 1.0545670092049249 = \text{Median}\{RV...RX\}$$

$AX = 0.0070261763632109$ is self-information lower point of inverse eccentricity

Fundamental Units of Quantum Metric

Decimal orders of normalized quantum constants are easily extracting from the Wien wavelength displacement law and the approximate exponential expression $E^{137} = 100*PI*10^{57}$.

$C = [RC^{64}/10]*10^8 = 2.9979245786759104(30)*10^8$ is rotational speed of light

$V = [RV^{64}/10]*10^8 = 2.9979245697688564*10^8$ is translational speed of light

$T = [RT^{64}/10]*10^8 = 2.9979245608618054*10^8$ is vibrational speed of light

$K = [E+AS+BS] = 2.7315999984590452$ is Kelvin's limit of background temperature

$AF = [1000/\text{Integer}\{1000*\text{Sqrt}(A^2+PI^2)\}] = 0.0072973525205056$ is fine structure constant

$PP = 2*(RP)/(10^{34}) = 6.6260700111158524*(10^{-34})$ is Planck's constant (harmonic orbital perimeter)

$MM = 12-[AV]/10 = 11.9992777505492$ is molar mass constant (relative amplitude)

$KB = \text{Cos}[MM]-\text{Sin}[MM]/(10^{23}) = 1.380648450231*(10^{-23})$ is Boltzmann's constant (relative phase)

$NA = 1000*\text{Median}\{NE...NB\}*(10^{23}) = 6.0221410564149*(10^{23})$ is Avogadro's constant (entropy)

$G = \text{Median}\{GM...GQ\}/(10^{11}) = 6.6740528968519343*(10^{-11})$ is Newtonian gravitational constant

The problem of the mutual coordination of constants was not physical, it was not metrological, it was a computational problem. Insufficiently correct conventional CODATA values of the speed of light, of the triple point of water and the relative molar mass led to the weak coordination of other fundamental constants and caused ultraviolet and infrasound "catastrophes" of quantum physics.

Conclusion

Absolute quantum metric system has been created.

Basic formula of quantum metric is $E^{(j*PI)+1} = [Ai]/10^{57} > 0$.

References

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