Numeric Table - Codata 2018

BASIC DATA		
$c = 299792458$ m s^{-1}	$h = 6.62607015\text{x}10^{-34}$ J s	$G = 6.6729196876\text{x}10^{-11}$ m^3 kg^{-1} s^{-2}
STATIONARY PARTICLE - PLANCK BLACK HOLE		
Planck time t_p	$(\pi h G/c^5)^{1/2}$	$2.39501999\text{x}10^{-43}$
Planck mass M	$h/t_p c^2$	$3.078261289\text{x}10^{-8}$
Quantized Planck mass M_0	$M t_p^{1/2}$	$1.50646849\text{x}10^{-29}$
Planck impedance Z_p	$(M_0/\hbar)^{1/2}$	377.95661
Planck permittivity ε_p	$1/Z_p c = (M_0/2\pi M)^{1/2} = (t_p/4\pi^2)^{1/4}$	$8.82546\text{x}10^{-12}$
Planck charge Q	$M(4\pi\varepsilon_p G)^{1/2}$	$2.648116197\text{x}10^{-18}$
ROTATING PARTICLE - INITIAL ELECTRON STATE		
Toroid ratio unitary charge squared/unitary time w_u	$16\pi^4 Q_u^2/t_u$	1558.54545654
Initial fine structure α_0	$(w_u t_p)^{1/2}/Q$	$7.295873082\text{x}10^{-3}$
Initial charge e_0	$(w_u t_p/\alpha_0(2-\alpha_0))^{1/2}$	$1.60233848\text{x}10^{-19}$
Initial mass m_b	$M_0(\alpha_0/2)^{1/2}(1-\alpha_0/2)^{3/8}$	$9.08632986\text{x}10^{-31}$
RELATIONS AMONG CONSTANTS (CODATA 2018 ELECTRON CHARGE $e = 1.6021766340\text{x}10^{-19}$)		
Theoretic charge e_t	$(w_u t_p/\alpha(2-\alpha))^{1/2}$	$1.6021766364\text{x}10^{-19}$
Permittivity ε_0	$\varepsilon_p(\alpha_0/\alpha)^2(e/e_t)^2/(1-\alpha/2)$	$8.8541878128\text{x}10^{-12}$
vacuum fine structure: standard negative strong	$\alpha^3-2\alpha^2+w_u t_p/2\varepsilon_0 hc(e_t/e)^2 = 0$	$\alpha = 7.29735256929\text{x}10^{-3}$ $\alpha_n = -7.2708233367\text{x}10^{-3}$ $\alpha_{sv} = 1.9999734707674$
Newton's G with current data	$8\hbar c^3(\alpha^2(2-\alpha)/\mu_0 w_u)^2 = (c^5/\pi h)(\alpha(2-\alpha)e^2/w_u)^2$	$6.6729196475\text{x}10^{-11}$
ELECTRON DATA		
electron fine structure: standard strong	$\alpha^2-2\alpha+w_u t_p/e_t^2 = 0$	$\alpha = 7.29735256929\text{x}10^{-3}$ $\alpha_s = 1.99270264743$
Mass m_e	$M_0(\alpha/2)^{1/2}(\alpha/\alpha_0)^{12}((1-\alpha/2)(2-\alpha)/(2-\alpha_0))^{3/8}$	$9.1093837015\text{x}10^{-31}$
Gravitational force $F_g = Gm_e^2$	$t_p\hbar c\alpha(\alpha/\alpha_0)^{24}((1-\alpha/2)(2-\alpha)/(2-\alpha_0))^{3/4}$	$5.5372469\text{x}10^{-71}$
Electric force $F_e = e^2/4\pi\varepsilon_0$	$Q^2\alpha/8\pi\varepsilon_p = GM^2\alpha/2$	$2.307077552\text{x}10^{-28}$
Force ratio F_g/F_e	$t_p(\alpha/\alpha_0)^{24}((1-\alpha/2)(2-\alpha)/(2-\alpha_0))^{3/4} = (2/\alpha)(m_e/M)^2$	$2.400113\text{x}10^{-43}$
Bohr magneton μ_B	$e\hbar/2m_e = (e/e_t)(Q\hbar/M_0)(\alpha_0/\alpha)^{13}(1-\alpha/2)^{1/8}((2-\alpha_0)/(2-\alpha))^{3/8}/(2-\alpha)$	$9.2740100783\text{x}10^{-24}$
Rotational speed u_e	$c(1-\alpha/2)^{1/2}$	299245035.3858
Compton wavelength λ_c	$\pi GM^2/m_e c^2$	$2.42631023867\text{x}10^{-12}$
Unadjusted Larmor frequency f_e	$e/2\pi m_e$	$2.799248987\text{x}10^{10}$
MAGNETIC PROPERTIES		
Magnetic field ratio B_e/B	$\mu_0 f_e e/2\lambda_c = \alpha/2\pi$	$1.161409732887\text{x}10^{-3}$
Interaction between applied field B and induced field B_e	$(\alpha/2\pi)(1-\alpha/2\pi)+\delta_p$	$1.16006087925\text{x}10^{-3}$
Sensitivity to other physics δ_p	*Lorentz factor, strong and weak interaction, other (lamped)*	$1.893\text{x}10^{-11}$
Fine structure in intrinsic magnetic moment α_m	$\alpha/(1+\alpha/2\pi-(\alpha/2\pi)^2+\delta_p)^{1/13}$	$7.2967017932\text{x}10^{-3}$
Magnetic moment mass m_m	$M_0(\alpha_m/2)^{1/2}(\alpha_m/\alpha_0)^{12}((1-\alpha_m/2)(2-\alpha_m)/(2-\alpha_0))^{3/8}$	$9.09923648\text{x}10^{-31}$
Magnetic moment charge e_m	$(w_u t_p/\alpha_m(2-\alpha_m))^{1/2}$	$1.60224782\text{x}10^{-19}$
Gyromagnetic ratio γ_e	$(e/e_t)e_m/m_m$	$1.76085963023\text{x}10^{11}$
Magnetic moment μ_e	$(e/e_t)e_m\hbar/2m_m$	$9.2847647043\text{x}10^{-24}$
μ_e/μ_B	$\gamma_e/(e/m_e) = (\alpha/\alpha_m)^{13}((2-\alpha)/(2-\alpha_m))^{5/4}$	1.00115965218128
ELECTRIC FIELD FROM GRAVITATIONAL VARIATION		
Materialization time t_e	$h/m_e c^2$	$8.09329979\text{x}10^{-21}$
Gravitational change Δg	Gm_e/t_e	$7.51068012\text{x}10^{-21}$
Electric field $e/4\pi\varepsilon_0$	$\Delta g(e_t/e)(M/Q)(\alpha_0/\alpha)^{23}(2/\alpha)^{1/2}((2-\alpha_0)/(2-\alpha))^{3/4}/(1-\alpha/2)^{1/4}$	$1.439964548\text{x}10^{-9}$
SUPERLUMINAL SPEED AND IMAGINARY PARTICLE (SELECTRON)		
Imaginary selectron charge $\tilde{e}$	$(w_u t_p/\alpha_{sv})^{1/2}/\alpha_n{}^{1/2}$	$-1.6021766364\text{x}10^{-19}i$
Imaginery selectron mass m_s	$M_0(\alpha_n/2)^{1/2}(\alpha_n/\alpha_0)^{12}((1-\alpha_n/2)(2-\alpha_n)/(2-\alpha_0))^{3/8}$	$8.7516489289\text{x}10^{-31}i$
Superluminal photon speed c_s	$\tilde{e}^2/2\varepsilon_0\alpha_n h(e_t/e)^2$	300886318.1415
Superluminal rotating speed u_s	$c(1-\alpha_n/2)^{1/2} = (c_s/c)u_e$	300336898.1328
Monopole magnetic charge q_m	$c\tilde{e}$	$-4.8032047198\text{x}10^{-11}i$

Calculation sequence

1) The adopted Planck time is higher by a factor $\pi\sqrt{2}$ while the adopted Planck mass is higher by a factor $\sqrt{2}$ if compared with the Codata values. This depends on the model used for the Planck particle. The adopted model allows the construction of a logical path leading to the electron and to other data including a negative fine structure constant and a superluminal speed as a consequence.
2) G was first calculated with the equation giving G in the previous page. If we had adopted this value for G we would have been able to calculate the fine structure constant α directly from the electron equation. This procedure would not yield the correct value for some electron parameters such as mass, Compton wavelength, etc., because the electron charge is not the exact quantity as proposed in Codata 2018. So a slightly higher value for G was adopted as part of the basic data. The relation between the initial fine structure α_0 thus obtained and the fine structure α allow us to get all known constants.
3) With the older Codata 2014 we had an exact permittivity and the fine structure could be derived directly from the vacuum fine structure equation. Two exact constants, h and e, introduced by Codata 2018, seem to be a step too far. It would have been better to retain permittivity and permeability as exact quantities because the actual electron charge is found to be slightly higher than its exact value.
   The value for the electron charge proposed in Codata 2018 shows a small difference derived from the new relationships found in this study. As some electron data use the Codata electron charge, it is necessary to introduce a factor in the form of a ratio between the new electron charge and the one suggested by Codata in order to get the proper value for some of the electron parameters.
4) The calculated electron charge is $1.602\ 176\ 6364\text{x}10^{-19}$ C, an increase of 1.5 ppb from the Codata value of $1.602\ 176\ 6340\text{x}10^{-19}$ C. The calculated value for the electron charge is well within the deviation proposed before its adoption as an exact quantity where the electron charge is given at $1.602\ 176\ 6341(83)\text{x}10^{-19}$ C, page 21.
   https://www.researchgate.net/publication/320995786_Data_and_analysis_for_the_CODATA_2017_Special_Fundamental_Constants_Adjustment

Outstanding points

- The constant of gravitation G, as given by Codata 2018, is about 9 standard deviations higher than the value used in this study. Although this latter value is close to the experiment performed by G. Rosi et al, http://arxiv.org/abs/1412.7954, the discrepancy has no easy explanation; there might be a difference between a quantum world involving the mentioned experiment and our macro-world where experiments are carried out with massive objects.
- The "sensitivity to other physics" is a hypothetical value and requires a confirmation.
- Particles rotating at superluminal speed are the answer to a supersymmetric universe but they need experimental verification, possibly through some subtle interactions with our real world.