The gravitational to the electric force ratio in an electron is numerically close, by 0.22%, to Planck time, disregarding a \( \pi \sqrt{2} \) factor.

\[
\frac{F_g}{F_e} \approx t_p
\]

Actually there is no dimensional mismatch once the quantization of time and mass is introduced. This gives us the link connecting electric and gravitational quantities based on an underlying structure of a black hole electron.
Connecting Fundamental Constants

\begin{align*}
  t_p &= \frac{GM_0^2}{GM^2} \\
  \varepsilon_p &= \left(\frac{t_p}{4\pi^2}\right)^{1/4} \\
  GM^2 &= \frac{Q^2}{4\pi\varepsilon_p}
\end{align*}

\( t_p \) = Planck time, \( M \) = Planck mass, \( M_0 = Mt_p^{1/2} \) quantized Planck mass, \( \varepsilon_p \) = Planck permittivity

Time loses its meaning in a black hole. Past the event horizon the time dilation might “freeze” what we see. Outside the black hole, the quantized gravitational force \( GM_0^2 \) has an additional time dimension, the Planck time.
The energy of the Planck black hole is given by $GM^2/2l_p$, but the constrain of time $t_p$ outside the black hole would give us something slightly different, the Planck constant and the quantized mass $M_0$. 

\[
(GM^2/2l_p)t_p = \hbar \\
\text{Planck constant} \\
M_{tp}^{1/2} = M_0 \\
\text{quantized non rotating mass} \\
M(4\pi\epsilon_0 G)^{1/2} = Q \\
\text{non rotating charge}
\]
A rotating charge will set up a magnetic field opposing its own rotation until a stability point is reached. The rotational speed \( u_0 \) is related to the initial fine structure constant \( \alpha_0 = 2(1-u_0^2/c^2) \). \( \alpha_0 \) would depend on some electrical properties of the particle and how charge \( Q \) compares with a ring of unitary charge \( Q_u \) and unitary time \( t_u \) so that \( \alpha = (w_u/w_p)^{1/2} \) where \( w_u = 16\pi^4 Q_u^2/t_u \) and \( w_p = Q^2/t_p \). The introduction of an exact quantity for the electron charge \( e \) requires a compensating factor \( e'/e \), with \( e' = (w_u t_p/a(2-a))^{1/2} \), to be applied to some equations.
Rotation Slowdown

A complete agreement with known values is achieved by lowering the rotational speed from $u_0$ to $u_e$. The precession of spin angular momentum $S$ has the effect of lowering speed $u_0$ with a corresponding decrease of the charge from $e_0$ to $e_t$ and an increase of the fine structure from $\alpha_0$ to $\alpha$. The presence of an external magnetic field $B$ increases speed $u_e$ to $u_m$ and is responsible for the magnetic moment anomaly.

Vacuum equation

$$\alpha^3 - 2\alpha^2 + w_n t_p/2 e_0 (e_t/e)^2 \hbar c = 0$$

Electron equation

$$\alpha^2 - 2\alpha + w_n t_p/e_t^2 = 0$$

Fine structure of magnetic moment

$$\alpha_m = \alpha/1.000089187709953$$

Rotational speed

$$u_m = c (1 - \alpha_m/2)^{1/2}$$

Magnetic moment anomaly

$$\alpha_c = (\alpha/\alpha_m)^{13} ((2 - \alpha)/(2 - \alpha_m))^{5/4} - 1$$

In the initial electron the spin angular momentum $S$ cannot have a definite orientation in space due to limitations imposed by the uncertainty principle.

The presence of an external magnetic field $B$ will cause vector $J$ to precess about $B$ and will also slightly increase speed $u_e$ to $u_m$, leading to the known magnetic anomaly.
Magnetic Anomaly with Known Constants

The magnetic field ratio generated by an electron rotating with the Larmor frequency $f_e = e/2\pi m_e$ on a radius $\lambda_c =$ Compton wavelength, is always $\alpha/2\pi$. Interaction between applied and induced field is then related to the variation of the fine structure constant thus taking care of magnetic electron parameters. A residual discrepancy $\delta_p$ is due to other minor factors and can be safely ignored except for the calculation of anomaly $a_e$.

Magnetic field ratio

$$B_e/B = \mu_0 f_e/2\lambda_c = \alpha/2\pi$$

Interaction between main and induced field

$$(\alpha/2\pi)(1-\alpha/2\pi)+\delta_p = (\alpha/\alpha_m)^{13} - 1$$

Supposed frequency sensitivity to other factors

$$\delta_p = 1.893 \times 10^{-11}$$

$\alpha$ variation due to magnetic interaction

$$\delta_\alpha = \alpha/\alpha_m = (1+\alpha/2\pi-(\alpha/2\pi)^2+\delta_p)^{1/13}$$

Magnetic moment anomaly

$$a_e = \delta_\alpha^{13}/(2-\alpha/(2-\alpha/\delta_\alpha))^{5/4} - 1$$
Mass $M$ would not stand still but would move with speed $v$ calculated by applying the uncertainty principle to mass $M_0$. This would show as the kinetic energy of mass $M$. Their gravitational ratio would contain a constant which is our Planck permittivity. Time $t_p$ and permittivity $\varepsilon_p$ are directly related thus originating a relationship linking the electric and gravitational force in an electron.
The small change of the rotational speed will lower the charge value. This change is written in terms of the fine structure constant variation thus giving the known permittivity and electron charge. The measurable ratio $F_g/F_e$ is now calculated with precision once rotation and its variation is taken into account. Now it is possible to calculate $G$ directly from other constants.

\[
F_g/F_e = t_p(a/a_0)^{24}((1-\alpha/2)(2-\alpha)/(2-a_0))^{3/4}
\]

\[
e_t = Q/(a/a_0)(2/\alpha-1)^{1/2} = (w_u t_p/\alpha(2-\alpha))^{1/2}
\]

\[
G = 8hc^3(a^2(2-\alpha)/\mu_0\mu_0)^2
\]

\[
\epsilon_0 = \epsilon_p/(a/a_0)^2(1-\alpha/2)(e/e)^2
\]
The electron force is equal to the gravitational force of the Planck mass provided we take into account its rotation represented by $\alpha$. The mass variation in an electron, from zero to $m_e$, will generate the relevant electric field $E_e$ without any knowledge of its charge. $E_e$ includes a number of terms regarding its rotation and subsequent slowdown and it is also equal to $M(\alpha G/8\pi\epsilon_0)^{1/2}$.
An extra tug would be generated whenever one mass moves with respect to another. The attractive force would slightly modify the classic law of gravitation with the peculiarity that it would be prominent only at a certain distance. Could the above galaxy cluster be an example of this additional pull rather then the work of dark matter? Measurements of the constant of gravitation $G$ could be dependent also on the relative speed and not just their relative distance.
The vacuum equation will intersect the abscissa in three places: $\alpha$, $2-\delta$ and at a negative point given by $\alpha_n = -\alpha + \delta$. The negative value hints at the possibility of a speed faster than light by 0.18% and imaginary particles. The fine structure is decreased by a small amount, 89 ppm, enough to generate the magnetic anomaly and magnetic moment. All data from $c$, $h$ and $G$ only. All numerical results within one standard deviation, except for $G$, with $h = 6.62607015 \times 10^{-34}$ and $G = 6.6729196876 \times 10^{-11}$
Superluminal Speed and Imaginary Electron

Speed levels

\[ c + 5.44 \times 10^5 = u_s \]
\[ u_c = \text{mean speed} \approx c \]
\[ c - 5.47 \times 10^5 = u_e \]

\[ u_s = c (1 - \alpha_n / 2)^{1/2} \]
\[ u_e = c (1 - \alpha / 2)^{1/2} \]

Quartic mean \( u_c = (u_s^4 / 2 + u_e^4 / 2)^{1/4} \)
\[ u_c \approx c \]

Imaginary electron generated by \( \alpha_n \)

Rotation at speed \( u_c \) is so fast that the magnetic force prevails over the electric force and the particle is now showing a net magnetic charge.

Gravitational forces are repulsive and masses will not coalesce to form stars, planets, galaxies, etc.

A four dimension spacetime would be required for a speed \( > c \). The mean speed \( u_c \) between the superluminal speed \( u_s \) and \( u_e \) is then given by a quartic mean. It was expected \( u_c = c \) but the result shows an unaccounted difference of 22ppt (parts per trillion). The superluminal speed would apply to massless and imaginary particles, possibly dark matter. Any real mass would be present in a three dimension spacetime only and the negative fine structure constant \( \alpha_n \), hence \( u_s \), would no longer apply.