A STEP TOWARDS QUANTUM GRAVITY

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ABSTRACT

We will learn to calculate Newton's classical force of gravity in a new quantum-mechanical (h-based) way. (Einstein's general relativity obtains the same classical result as Newton.) Just 8 steps are required:

1) Calculate Newtonian classical gravity for absolutely any situation. $F_{gravity}=Gm_1m_{2}$-/r^2, where G=6.6728674 X 10^{-8} $cm^3/gmsec^2$; m_1 and m_2 are the 2 masses; r is the distance between them; cm=centimeter; gm=gram; and sec=second.
2) Separately, take ANY MASS AT ALL - - m - - and set it equal to 1.
3) Set m's de Broglie wavelength - - λ - - equal to –1.
4) Set the time, t, taken for light to travel λ (=λ/c) equal to $\sqrt{-1}$.
5) Calculate a numerical value for the three c-g-s units via steps 2), 3) and 4) respectively.
6) Calculate G using these new unit equivalencies, resulting in a positive number result. (t^2 will cancel –1 because t = $\sqrt{-1}$]. Call this result y.
7) Recalculate step 1), REPLACING G with y, and REPLACING the c-g-s units with the new unit equivalencies, resulting in another positive number. Call it n.
8) Calculate nh/λt. This quantum-mechanical term will ALWAYS be exactly equal to the classical gravity, Gm_1m_2/r^2, calculated in step 1) (minus late-decimal rounding.) This will ALWAYS be true FOR ANY AND ALL m_1, m_2, r, m, λ and t.

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1) First, we calculate classical Newtonian gravity - - Gm_1m_2/r^2. For example, let m_1 = 1.6 X 10^{25}gm (planetary size); m_2 = 1.7 X 10^{26}gm; and r =1.8 X 10^{12}cm. Gm_1m_2/r^2 is here calculated to be 5.6019126 X 10^{19} $gmcm/sec^2$ (= dynes). Einstein would obtain this result as well via general relativity. Our task is to generate a quantum-mechanical term that gives us this exact classical result.
2) Take ANY MASS AT ALL - - for example, m=2.0164598 X $10^{1,536,827}$gm - - and set it equal to 1.
3) Take m's de Broglie wavelength - - λ (=h/mc) (h=6.626069 X 10^{-27} $gmcm^2/sec$ and c=2.9979246 X 10^{10} cm/sec)=1.0960886 X $10^{-1,536.864}$ sec - - and set it equal to –1.
4) Take the time, t, taken for light to travel one λ (=λ/c) - - =3.6561579 X $10^{-1,536.875}$ sec - - and set it equal to $\sqrt{-1}$. (We will use t=$\sqrt{-1}$ a bit later, when t^2 will cancel out with –1.)
5) Calculate new numerical values for the three units based on 2), 3) and 4) respectively:

m=2.0164598 X $10^{1.536,827}$ gm = 1 implies that gm=4.9591863 X $10^{-1,536,828}$; λ=h/mc=1.0960886 X $10^{-1,536,864}$ cm = –1, implies that cm= –9.12335 X $10^{1,536.863}$; and t=λ/c=3.6561579 X $10^{-1,536,875}$sec (=$\sqrt{-1}$), which implies that sec=2.7351116 X $10^{1,536,874}$ t(=2.7351116 X $10^{1,536,874}$ $\sqrt{-1}$).

6) We recalculate G, replacing 6.6728674 X 10^{-8} $cm^3/gmsec^2$ with a calculation using the three c-g-s unit equivalencies of step 5). G thus = 1.3658876 X $10^{3,073,663}$. Call this positive number y.
7) We recalculate Gm_1m_2/r^2, REPLACING G with y, and REPLACING the three c-g-s units with their unit equivalencies (step 5)). Gm_1m_2/r^2 thus recalculated = 3.3880593 X $10^{-3,073,693}$. Call this last positive number n.
8) Calculate nh/λt, a quantum mechanical term. It will ALWAYS exactly equal step 1)'s classical Gm_1m_2/r^2. We will perform this calculation in detail for clarity: nh/λt=[(3.3880593 X $10^{-3,073,693}$) (6.626069 X $10^{-27}$$gmcm^2$/sec)] /[{1.0960886 X $10^{-1,536,864}$cm)(3.6561579 X $10^{-1,536.875}$sec)] =[22.449514 X $10^{-3,073,720}$$gmcm^2$/sec]/[4.0074729 X $10^{-3,073,739}$cmsec] =5.6019128 X $10^{19}$$gmcm/sec^2$ (= dynes) =Gm_1m_2/r^2 of step 1) (minus late-decimal rounding)! nh/λt will ALWAYS equal Gm_1m_2/r^2, each calculated one hundred percent normally, in proper units. Notice how neatly the two "million-dollar" exponents together create 10^{19}!

CONCLUSION

Although still retaining the bare outline of classical gravity, we have nonetheless created a quantum-mechanical term, nh/λt, which ALWAYS equals Gm_1m_2/r^2. This, then, is indeed a step towards quantum gravity. Whether m_1 and m_2 are two planets, two electrons, or anything else - - even two galaxies - - nh/λt will ALWAYS equal Gm_1m_2/r^2 quite precisely. The reader is invited to try this process on his own with entirely different values for everything. As long as ANY m=1, its λ= –1 and its t=$\sqrt{-1}$, nh/λt will always equal Gm_1m_2/r^2. (In short, the quantum-mechanical ONENESS of the universe leads mathematically to quantum gravity, as it logically should.)

Any questions or comments should be addressed to the author at forsablue@aol.com. All such questions and comments will be answered promptly.