The New Gravitational Constant G_V

by James Carter

When Newton calculated his gravitational constant G, he got it upside down. There are two reciprocal constants of gravity that represent cause and effect of force and motion. Newton's imagined a downward force of gravity that caused the effect of downward gravitational velocity in falling bodies. Even though he spent his whole life feeling gravity pushing his body upward, Newton refused to believe that this real gravitational motion was the cause and not the effect of the upward force that he measured with his accelerometer.

The measured upward force of gravity g is produced by the upward escape/surface velocity ${}_{es}V$ of Earth. The constant for gravitational velocity $G_V = 9.211 \times 10^{-14}$ m/s *is the escape/surface velocity at the Bohr radius of the hydrogen molecule that produces the force of gravity at the Bohr radius* $g_B = 8.018 \times 10\text{-}17$ m/sec^2 . *These two reciprocal constants are the Yin and Yang of gravity and must be used together in all calculations of gravitational motion and force.*

$$\textbf{Gravitational Velocity Constant@ } a_o\ G_V = \sqrt{\frac{2g\, a_o^2}{R_E\, M_L^3}} = 9.211 \times 10^{-14}\ \text{m/s}$$

To determine the value of the gravitational velocity constant (G_V) in order to replace the old gravitational constant (G) we must first determine the ratio between Earth's overall density and the intrinsic density of Hydrogen at the Bohr radius (a_o). By coincidence, we find that the density of Earth (5,518.9 kg/m^3) is very close to the intrinsic density of the Hydrogen molecule (H_2) at the Bohr radius (5,432.3 kg/m^3).

The density of Earth is 1.015942 (H_M/a_o^3). We take the cube root of this value (1.005286) to establish a new parameter of matter called *masslength* (M_L). Masslength is a unit of mass divided by a unit of length. The masslength at the Bohr radius is exactly one ($a_oM_L = 1.0\ H_M/a_o$) and the masslength of Earth at sea level is 1.005286 H_M/a_o, and the masslength at the surface of the moon is (.85054 H_M/a_o).

Once we determine the masslength at a body's surface, we can determine its intrinsic *expansion radius* (R_0). At this radius, the body's masslength is equal to one ($M_L = 1.0\ H_M/a_o$). The expansion radius of Earth is (${}_ER_0 = 6{,}404{,}995$ m) and the expansion radius of the moon is (${}_MR_0 = 1{,}478{,}486$ m). To calculate the constant for gravity (G_V) we measure Earth's mean sea-level gravity to be about (g = 9.807 m/s^2) and then determine its escape/surface velocity to be about ($V_{es} = \sqrt{2}gR = 11{,}179$ m/s).

While both escape and surface velocities have exactly the same values for points at or above Earth's surface, for points inside Earth, the surface velocity decreases to zero at its center, whereas escape velocity continues to increase to a maximum at the center.

Escape velocity is the upward velocity needed for a space ship to escape the earth's upward gravitational surface velocity and surface velocity is the static upward gravitational motion of a point at a given distance from a body's center.

We calculate the escape/surface velocity at Earth's expansion radius (R_0) to be (V_{es} = 11,149 m/s) and divide this by the number of Bohr radii in the expansion radius R_0 in order to arrive at the escape/surface velocity of the hydrogen molecule at the Bohr radius. This value is the gravitational velocity constant of $G_V = 9.2116013 \times 10^{-14}$ m/s. This constant is not a force, an attraction or an acceleration; G_V is just the constant velocity of the circumference of the Bohr radius away from its center. The Bohr radius of each atom moves away from its center at the constant velocity of G_V. This constant is every bit as fundamental and absolute as the speed of light (C). Just as the speed of light is very fast, the speed of gravity is very slow. For the Bohr radius to increase its dimension to one meter would take 10^{13} seconds or about 344,000 years. On the other hand, with 10^{17} Bohr radii stacked up between us and the center of Earth, our velocity away from its center is 11,179 m/s.

With the gravitational velocity constant (G_V) we can find a body's value of (g) at any radius (r) using the formulas:

$$G_V = \frac{a_o\sqrt{2g_o}}{\sqrt{R_o}} = 9.2116013 \times 10^{-14} \text{ m/sec}$$

$$\text{mean Earth } g = \frac{M_L G_V^2 R_o^2}{2a_o^2\, r} = 9.807 \text{ m/s}^2$$

Gravitational Expansion
Measurements, Constants, Equations and Values

Mass of Earth $M_E = 5.979 \times 10^{24}$ kg
Mass of H_2 molecule $M_H = 3.3719078 \times 10^{-27}$ kg
Radius of Earth $R_E = 6{,}371{,}315$ m
Radius of Moon $R_M = 1{,}738{,}300$ m
Bohr Radius $a_o = 5.29177294 \times 10^{-11}$ m
Acceleration of gravity earth $g = 9.807$ m/sec ^{2}
Acceleration of gravity moon $g = 1.62$ m/sec ^{2}
Acceleration of gravity @ Bohr radius $g = 8.018 \times 10^{-17}$ m/sec ^{2}
Escape/surface velocity earth $V_{es} = 11.179$ m/s
Escape/surface velocity moon $V_{es} = 2373.5$ m/s
Escape/surface velocity Bohr radius $V_{es} = 9.2116 \times 10^{-14}$ m/s
Gravity Constant = $G_v = 9.2116 \times 10^{-14}$ m/s
Masslength Bohr Radius $M_L = 1.0 M_H/a_o$
Masslength earth $M_L = 1.005286\ M_H/a_o$
Masslength moon $M_L = .85054\ M_H/a_o$
Expansion Radius of earth $R_o = 6{,}404{,}995$ m
Expansion Radius of moon $R_o = 1{,}478{,}486$ m
Earth gravity g_o @ $R_o = 9.704$ m/s^2
Moon gravity g_o @ $R_o = 2.24$ m/s^2
Escape/surface velocity of earth @ R_o $V_{es} = 11{,}149$ m/s
Escape/surface velocity of moon @ $R_o V_{es} = 2573.6$ m/s
Time for a body's expansion radius R_o to double = 32.69 minutes

Masslength of earth = $M_L = \sqrt[3]{\dfrac{D_E}{D_{a_o}}} = 1.005286\ M_H/a_o$

Masslength @ surface = $M_L = \sqrt[3]{\dfrac{a_o^3\, M}{R^3\, M_H}}$ = earth = $1.005286\ M_H/a_o$ moon = $.85054\ M_H/a_o$

Gravitational Velocity Constant@ a_o $G_V = \sqrt{\dfrac{2g\, a_o^2}{R_E\, M_L^3}}$ = 9.211×10^{-14} m/s

Acceleration of gravity = $g = \dfrac{R_E\, G_v^2\, M_L^3}{2\, a_o^2} = \dfrac{V_{es}^2}{2R_E}$ = 9.807 m/s^2 earth = 1.6205 m/s^2 moon

Expansion Radius R_o ($M_L = 1.0$) = $\sqrt[3]{\dfrac{a_o^3\, M_E}{M_H}}$ = 6,404,995 m earth = 1,478,486 m moon

Gravity g_o @ $R_o = \dfrac{g\, R_E^2}{R_o^2}$ = 9.704 m/s^2

Gravity g_o @ $R_o = \dfrac{G_V^2\, R_o}{2\, a_o^2}$ = 9.704 m/s^2 earth = 2.24 m/s^2 moon

Escape/Surface Velocity @ R = $\dfrac{G_V\, R\, \sqrt{M_L^3}}{a_o} = \sqrt{2\, g\, R}$ = 11,179 m/s earth = 2373.5 moon

Escape/Surface Velocity @ $R_o = V_{es} = \sqrt{2\, g_o\, R_o}$ = 11,149 m/s earth = 2573.6 m/s moon

Escape/Surface Velocity @ $2R_o = V_{es}\ \sqrt{1/2}$ = 7883.5 m/s earth = 1819.8.6 m/s moon

Time of Fall from $2R_o$ to $R_o = R_o /\, {}_{1R}V_{es} - {}_{2R}V_{es}$ = (11,149 - 7883.5 = 3265.5) = 32.69 min