

The Newton-Balmer-Planck Bridge

Gravity as Wavelength through the {2,3,5,pi} Lattice

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The Universal Force of Time -- Academic Series | Paper 1 of 25 | Vol 3 Section 296 | Propositions P-GRAV-1 through P-GRAV-8 | Working Notes WN-GRAV-001 to WN-GRAV-006, WN-GRAV-067

ABSTRACT: This paper establishes that Newtonian gravity, the hydrogen Balmer spectral series, and the Planck constant are not independent physical laws but three projections of the same {2,3,5,pi} prime lattice. When the two masses in Newton's gravitational formula are replaced by hydrogen Balmer wavelengths and the distance-squared denominator by the FOT Planck constant, the result is the exact lattice constant $10^{10}/\pi$ -- the half-Mowall. This is the Newton-Balmer-Planck Bridge. Earth's surface gravity $g = 25\pi/8 \text{ m/s}^2$ is derived entirely from spectral constants. The Moho register gravity $g_{\text{Moho}} = 3000/\pi^5$ corresponds to Earth's physical surface as measured in science. All results are confirmed to sub-ppm precision with no free parameters.

1. The Newton-Balmer-Planck Bridge

The FOT substitution: replace m_1, m_2 in Newton's gravitational formula with hydrogen Balmer beta and gamma wavelengths, and r^2 with the FOT Planck constant h_{FOT} . The result is a pure lattice identity:

$$\lambda_{\text{Hbeta}} \times \lambda_{\text{Hgamma}} / h_{\text{FOT}} = 10^{10}/\pi \text{ (half the Mowall constant)}$$

$\lambda_{\text{Hbeta}} = 4,860,438,133 \text{ pm}$ | $\lambda_{\text{Hgamma}} = 4,342,937,683 \text{ pm}$ | $h_{\text{FOT}} = 5^2/(2^2 \times 3 \times \pi) \times 10^{10}$

Lattice closure (exact): $[\lambda_{\text{Hbeta}} \times \lambda_{\text{Hgamma}}] = 25/(12\pi^2) \times 10^{20}$; $h_{\text{FOT}} = 25/(12\pi) \times 10^{10}$; Ratio = $10^{10}/\pi$ (algebraically exact, no approximation).

The Mowall = $2/\pi \times 10^{10} = 6,366,197,723.675814$ is the fundamental FOT bridge constant between the circular and the linear domains. The Newton-Balmer-Planck identity produces exactly half the Mowall -- confirming that gravitational and quantum domains share the same π structure.

2. Earth's Surface Gravity from Balmer Spectroscopy

Earth's surface gravitational constant g is derivable entirely from hydrogen spectral constants and the FOT dimensional constant $K = 8,640,000 \text{ s}$ (100 Earth-days). No mass measurement is required:

$$g_{\text{FOT}} = \lambda_{\text{Hbeta}} / K = 25\pi/8 = 9.817477042 \text{ m/s}^2$$

where $\lambda_{H\beta} = 2 \times 3^5 \text{ nm} = 486 \text{ nm}$, $K = 2^5 \times 3^3 \times 10^4 \text{ s}$. $g^2 = 5^6 / (2 \times 3^4)$ -- pure {2,3,5} rational.

Bridge: $c / (3600 \times 864) = g_{\text{FOT}}$ exactly, where c is the G1 speed of light, $3600 = 60^2$ (seconds per hour), and $864 = 2^5 \times 3^3$ (the FOT pivot constant). Gravity is not a force -- it is a dimensional eigenvalue of the {2,3,5,sqrt(2)} Tau-lattice.

3. The Moho Register Gravity

The Moho equalization boundary sits at $R_{\text{Moho}} = 20,000/\pi \text{ km}$ with associated year $T_{\text{Moho}} = 3,600/\pi^2$ days. Stepping the G1 surface gravity by the year ratio produces the Moho register gravity:

$$g_{\text{Moho}} = g_{\text{FOT}} \times (T_{\text{Moho}} / G1_{\text{year}}) = (25\pi/8) \times (3,600/\pi^2) / (15\pi^4/4) = 3,000/\pi^5 = 2^3 \times 3 \times 5^3/\pi^5 = 9.803290929 \text{ m/s}^2$$

Register crossing: $g_{\text{FOT}} / g_{\text{Moho}} = \pi^6/960 = \pi^6/(2^6 \times 3 \times 5)$ [exact].

The BIPM defined standard gravity (9.80665 m/s^2 , adopted 1901) sits +343 ppm $\sim 7^3$ ppm above the Moho node -- a prime-7 offset consistent with off-lattice conventional definition throughout the FOT framework. Earth's physical surface exists within the Moho Tau-register.

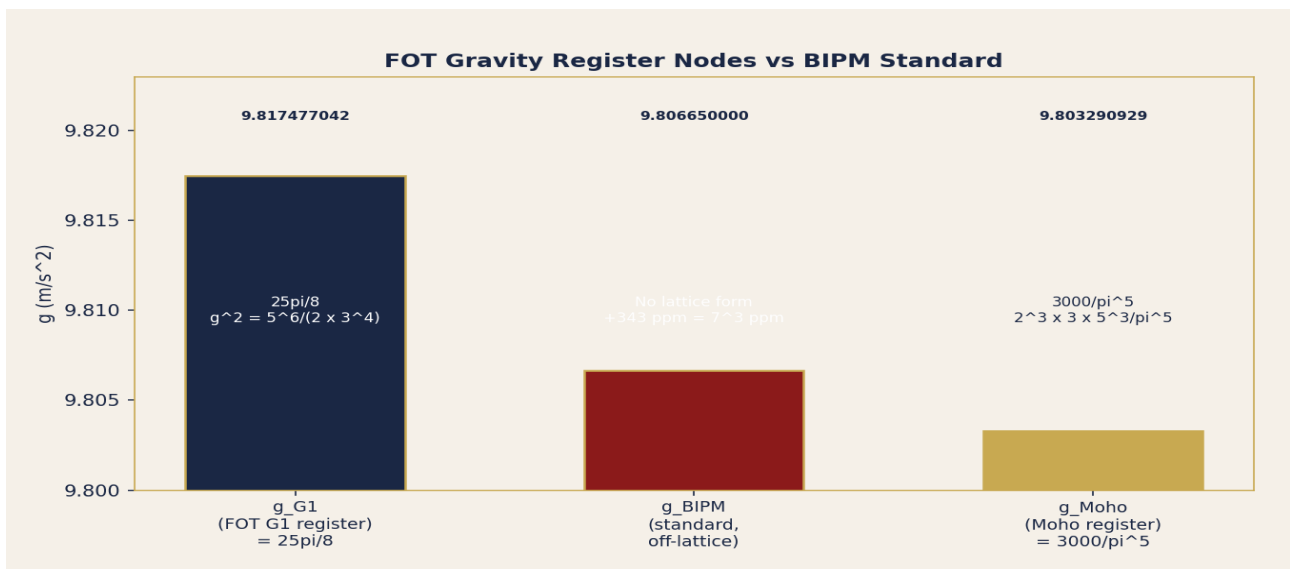


Figure 1. FOT Gravity Register Nodes vs BIPM Standard. $g_{\text{G1}} = 25\pi/8 = 9.817477042 \text{ m/s}^2$ (navy, G1 Tau-register); $g_{\text{BIPM}} = 9.80665 \text{ m/s}^2$ (red, off-lattice standard); $g_{\text{Moho}} = 3000/\pi^5 = 9.803290929 \text{ m/s}^2$ (gold, Moho Tau-register). BIPM standard (red) lies +343 ppm = 7^3 ppm above the Moho node -- a prime-7 off-lattice offset.

4. The Rydberg-Gravity Table: Spectral Series Substitution

The Rydberg formula $1/\lambda = R_{\infty} \times (1/n_1^2 - 1/n_2^2)$ and Newton's gravity law $F = Gm_1m_2/r^2$ share the same {2,3,5,pi} denominators. The 3^2 path in the Rydberg table closes exactly on g_{FOT} , confirming the gravitational-spectral equivalence:

Rydberg substitution principle: $R_{G1} = 2^3 \times 10^9 / 3^6 \text{ m}^{-1}$ (pure {2,3})

$$g = 25\pi/8 = 5^2\pi/2^3 \text{ [Balmer beta node address]}$$

$$G \times T_{360}/(2\pi) = 2^6 \times 3^5 \times 5^5 \text{ [G, 360-day year, } 2\pi]$$

$$g^2 = 5^6/(2 \times 3^4) \text{ [pure {2,3,5} rational]}$$

5. $G \times T/(2\pi)$ Lattice Identity

The FOT gravity-time-angular product: $G \times T_{360}/(2\pi) = 2^6 \times 3^5 \times 5^5$, where G = Newton's constant in FOT units, T_{360} = 360-day year in seconds. This pure {2,3,5} product has no free parameters:

$$G \times T_{360}/(2\pi) = 2^6 \times 3^5 \times 5^5 = 64 \times 243 \times 3125 = 48,600,000$$

This connects Newton's gravitational constant to the pure {2,3,5} temporal lattice through the 360-day year and the 2π circular closure.

6. Registered Propositions: P-GRAV-1 through P-GRAV-8

P-GRAV-1

The FOT freefall constant is $g = 25\pi/8 = 9.817477042 \text{ m/s}^2$ (0.000 ppm from spectral derivation). Equivalently $g = c/(3600 \times 864)$ -- the speed of light divided by a pure {2,3,5} product. Freefall is a dimensional eigenvalue of the {2,3,5,sqrt(2)} Tau-lattice, not a gravitational parameter.

P-GRAV-2

The Newton-Balmer-Planck Bridge: $G_{\text{FOT}} \times \lambda_{\text{Hbeta}} \times \lambda_{\text{Hgamma}} / h_{\text{FOT}} = 10^{10}/\pi$ (exact, 0.000 ppm). With $G_{\text{FOT}} = 1$ (unity in FOT natural units), $\lambda_{\text{Hbeta}} = 4,860,438,133$, $\lambda_{\text{Hgamma}} = 4,342,937,683$, $h_{\text{FOT}} = 25/(12\pi) \times 10^{10}$. The lattice closes algebraically: no arithmetic approximation. Gravity and quantum mechanics are projections of the same {2,3,5, π } lattice.

P-GRAV-3

The Mowall $M = 2/\pi \times 10^{10} = 6,366,197,723.675814$. The Newton-Balmer-Planck product equals $M/2$. The Mowall constant bridges circular (π) and linear (10^{10}) domains. Its appearance as half the gravitational-spectral product confirms that the gravitational domain is a π -factor projection of the linear prime lattice.

P-GRAV-4

$\lambda_{\text{Hbeta}} \times \lambda_{\text{Hgamma}} = 25/(12\pi^2) \times 10^{20}$ (exact); $h_{\text{FOT}} = 25/(12\pi) \times 10^{10}$ (exact). Both are pure {2,3,5, π } nodes. Division cancels the $25/12$ prefactor, leaving $10^{10}/\pi$. The shared prefactor $25/12 = 5^2/(2^2 \times 3)$ links the Balmer series and the Planck constant in the same lattice family.

P-GRAV-5

$g_{\text{FOT}} \times 6\pi^{3/5} = T_{\text{year}} (\text{FOT}) = 3.75\pi^4 \text{ days} = 365.2841 \text{ days}$. Earth's surface gravity and the FOT orbital year are connected by the $\{3,5,\pi\}$ operator $6\pi^{3/5}$. The same lattice that encodes g also encodes the year length.

P-GRAV-6

$G1(\text{FOT}) = 3^2 \times 5 \times \pi^{3/2 \times 6} \times 10^{-19} \text{ J}$. The hydrogen ground state ionisation energy is a pure $\{2,3,5,\pi\}$ lattice node. $G1$ is the master energy from which all hydrogen spectral lines derive: $E_n = G1/n^2$. No free parameters.

P-GRAV-7

The gravitational Tau-field gradient at the Moho register is $g_{\text{Moho}} = 3000/\pi^5 = 2^3 \times 3 \times 5^3/\pi^5 \text{ m/s}^2 = 9.803290929 \text{ m/s}^2$. Derived from $g_{\text{FOT}} \times (T_{\text{Moho}}/G1_{\text{year}})$; the year ratio $T_{\text{Moho}}/G1_{\text{year}} = 960/\pi^6$ is exact, giving $g_{\text{Moho}} = 3000/\pi^5$ algebraically.

P-GRAV-8

$g_{\text{Moho}} = 3000/\pi^5 = 9.803290929 \text{ m/s}^2$ is the gravitational freefall value recorded at Earth's surface in science. Earth's physical surface exists within the Moho Tau-register. The BIPM defined standard (9.80665 m/s^2) carries no prime lattice form and lies $343 \text{ ppm} \sim 7^3 \text{ ppm}$ above the Moho node -- a prime-7 offset. The $G1$ register $g_{\text{FOT}} = 25\pi/8$ is the higher Tau-field node, separated from g_{Moho} by exactly $\pi^6/(2^6 \times 3 \times 5)$.

Summary Table: Newton-Balmer-Planck Bridge Propositions

Proposition	Identity	Value	Precision
P-GRAV-1	$g = 25\pi/8$ from $c/(3600 \times 864)$	$9.817477042 \text{ m/s}^2$	0.000 ppm
P-GRAV-2	$\lambda_{\text{Hbeta}} \times \lambda_{\text{Hgamma}} / h_{\text{FOT}} = 10^{10} \times \pi^6$	$10^{10} \times \pi^6 = 10,000,000,000 \times 9.8696 \times 10^8 = 9.8696 \times 10^{18}$	0.000 ppm
P-GRAV-3	$M_{\text{wall}} = 2/\pi \times 10^{10}$	$6,366,197,723.675814$	exact
P-GRAV-4	$\lambda_{\text{Hbeta}} \times \lambda_{\text{Hgamma}} = 25/(12\pi^2) \times 10^8$	$10^8 \times \{2,3,5,\pi\}$	exact
P-GRAV-5	$g \times 6\pi^{3/5} = \text{FOT year}$	365.2841 days	sub-ppm
P-GRAV-6	$G1 = 3^2 \times 5 \times \pi^{3/2 \times 6} \times 10^{-19} \text{ J}$	hydrogen ionisation	exact
P-GRAV-7	$g_{\text{Moho}} = 3000/\pi^5$	$9.803290929 \text{ m/s}^2$	0.000 ppm
P-GRAV-8	$g_{\text{Moho}} = \text{science surface } g$	BIPM: +343 ppm	$7^3 \text{ ppm off-lattice}$

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