Energy Is Time

The Three Time-Registers of Energy, and the Ionization Energy Without Avogadro's Number

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Tau (T) is the living fabric of time itself — the sole substance of which all physical reality is composed. Every particle, force, wavelength, and conscious experience is a structured configuration of T-flow. There is no gravity, no electromagnetic force, no strong nuclear force as separate entities: all are registers of the single T-field operating across dimensional levels. The conservation law dΣT=0 governs all change: T is never created or destroyed, only redistributed.

Abstract

In the Universal Force of Time the sole substance is time (T); energy is therefore not a separate quantity but a register of time. We show that the three units in which energy is conventionally measured — the joule, the kilojoule per mole, and the electron-volt — are time read on three clocks: seconds, minutes, and the spin-orbital turn. The conversions between them are the corresponding time-bridges (×60 for the minute; $5^6/(2\cdot3^4)$, derived from the speed of light via ÷864, for the spin-orbit register), not empirical bridges requiring Avogadro's number or the measured elementary charge. As a decisive test we derive the hydrogen first-ionization energy from the speed of light and the fine-structure constant alone: $c\_G1 \times \alpha\_FOT = 2^3\cdot3^7\cdot5^3$ (the π^2 of c cancelling the $1/\pi^2$ of α), and ×60 gives $3^8/5$ = 1312.2 kJ/mol — the per-mole ionization energy, reached without Avogadro's constant ever appearing. We give the Force-of-Time conversion constants (the elementary charge e = $1.602459772\times10^{-19}$ C; the eV→kJ/mol factor $5^6/(2\cdot3^4)$; the Avogadro constant $2^5\times3^6/(5\pi)^3 = 6.018910362\times10^{23}$, 537 ppm below the SI value [5]) and show they are pure lattice quantities, displaced from their SI counterparts by the systematic Radian-Veil unit offset. Six propositions (P-EIT-1 to P-EIT-6) establish the framework, the derivation, and the falsifiable tests.

1. Premise and standard of proof

The Universal Force of Time (UFOT) posits a single substance, T — time — of which all physical reality is a configuration. A direct consequence is that energy is not an independent quantity bridged to time by Planck's constant; energy is a manner of counting T. This paper takes that premise to its operational conclusion: it identifies the three conventional units of energy with three registers of time, derives the inter-conversions as time-bridges, and tests the scheme by deriving a measured atomic energy — the hydrogen first-ionization energy — from no more than the speed of light and the fine-structure constant. Throughout we hold to a referee's standard: each conversion constant is given a lattice form and a parts-per-million comparison with the SI value, and each proposition carries a test that would falsify it.

Framework constants, derived elsewhere [1,3]: $c_{G1} = 2^3 \cdot 3^5 \cdot 5^6 \cdot \pi^2 = 299{,}789{,}233.7$ m/s; $\alpha_{FOT} = 9/(125\pi^2) = 1/137.0778$; $g_1 = 25\pi/8$; the temporal base $864 = 2^5 \cdot 3^3$ (seconds in a tenth-day unit) and the circle $360 = 2^3 \cdot 3^2 \cdot 5$.

2. The three registers — P-EIT-1

Energy expressed in joules is time counted in seconds — the base register, per particle. Expressed in kilojoules per mole it is the same energy counted in minutes: one factor of sixty higher, and per mole. Expressed in electron-volts it is energy in the spin-orbital register — the 864×360 turn of the T-field that also defines the speed of light. (See Figure 1.) The conversions are not empirical bridges but the time-bridges between these registers:

joule →(×60, the minute)→ kJ/mol eV ↔ kJ/mol : × $5^6/(2\cdot3^4)$ = 96.450617

The eV↔kJ/mol factor is not fitted: it is $c \times 5/(2^6 \cdot 3^5)$, i.e. the lattice speed of light brought down through the temporal base 864 [5]. The electron-volt therefore carries the 864 signature of the spin-orbital register by construction — which is the precise sense in which an electron-volt is "energy in spin-orbit."

P-EIT-1. The joule, the kilojoule-per-mole and the electron-volt are the seconds, minutes and spin-orbital registers of time; their conversions are ×60 and $5^6/(2\cdot3^4)$. Test: the eV↔kJ/mol factor must equal $c\times5/(2^6\cdot3^5)$ = 96.450617 exactly (a derived, not measured, number); the SI factor 96.485 carries the veil offset and differs systematically.

3. The ionization energy from c and α — P-EIT-2

The strongest test of "energy is time" is to obtain a measured atomic energy with no atomic or molar input. Multiply the speed of light by the fine-structure constant. Because c carries π^2 and α carries $1/\pi^2$, the transcendental cancels on contact, leaving a pure integer:

$$c_{G1} \times \alpha_{FOT} = 2^3\cdot3^5\cdot5^6\cdot\pi^2 \times 9/(125\pi^2) = 2^3\cdot3^7\cdot5^3 = 2{,}187{,}000$$

Take this one register up — ×60, seconds to minutes — and the result is the hydrogen first-ionization energy in the molar register:

$$c_{G1} \times \alpha_{FOT} \times 60 = 2^5\cdot3^8\cdot5^4 = 3^8/5 \times 10^5 \Longrightarrow \text{H ionization} = 3^8/5 = 1312.2 \text{ kJ/mol}$$

The per-mole ionization energy is reached without Avogadro's constant appearing anywhere; the molar register is the minute, not a particle count. Carried into the spin-orbital register (÷96.450617) it is 13.6049 eV; in joules (seconds), 2.18×10^{-18} J. The three are one energy on three clocks. (See Figure 2.)

P-EIT-2. The hydrogen first-ionization energy is $c_{G1} \times \alpha_{FOT} \times 60 = 3^8/5$ = 1312.2 kJ/mol, the π^2 cancelling, with no Avogadro constant. Test: $3^8/5$ is parameter-free; conventional chemistry reaches ~1312 kJ/mol only via N_A. Any measurement of the molar H-ionization energy must converge on $3^8/5$; the chain predicts it from c and α alone.

4. The conversion constants are lattice quantities — P-EIT-3

The constants that bridge the registers are themselves derived, not measured. The elementary charge (joule↔eV) is $e_{FOT} = 1.602459772\times10^{-19}$ C; the eV→kJ/mol factor is $5^6/(2\cdot3^4)$; and the Avogadro constant — needed by conventional chemistry but not by UFOT — is a pure {2,3,5,π} value [5]:

$$N_{A,FOT} = 2^5 \times 3^6 / (5\pi)^3 \times 10^{23} = 6.018910362 \times 10^{23} \text{ mol}^{-1}$$

P-EIT-3. The FOT conversion constants are lattice quantities: $e_{FOT} = 1.602459772\times10^{-19}$ C (+177 ppm vs SI); eV→kJ/mol = $5^6/(2\cdot3^4)$ (derived from c); $N_{A,FOT} = 2^5\times3^6/(5\pi)^3$. Test: each is parameter-free and must reproduce the corresponding measured bridge to within its veil offset.

5. Avogadro's number is 537 ppm too high — P-EIT-4

The 2019 SI redefinition fixed Avogadro's constant at 6.022140762×10^{23} from a chain anchored on Planck's constant held 812 ppm below its lattice value. UFOT's

value sits 537 ppm below the SI figure. The discriminating test is the hydrogen-ionization closure: with the lattice value, H_ion × N_A / 1000 returns the clean lattice number $3^8/5$; with the SI value it does not. The pre-2019 measurement programme was converging on the lattice value from above (consistent with the veil); the redefinition froze it 537 ppm short [5].

P-EIT-4. $N_{A,FOT} = 6.018910362\times10^{23}$; the SI value is 536.7 ppm high. Test: the H-ionization closure ($3^8/5$) closes with the lattice N_A and fails with the SI N_A — a test requiring only arithmetic, no new apparatus.

6. The Radian-Veil offset and the two eV registers — P-EIT-5,6

The offsets between the FOT and SI constants are not random; they are the systematic Radian-Veil displacement between Earth-surface measurement and the {2,3,5,π} lattice — present in Planck's constant (h_{SI} is 812 ppm below $h_{FOT} = 5^3/(2\cdot3\cdot\pi)\times10^{-34}$), the elementary charge (+177 ppm), and the speed of light (c_{SI} is 11 ppm above c_{G1}). When SI redefinitions chain constants together, these offsets compound. A direct consequence for energy: the electron-volt has two registers, the FOT-charge register and the SI-charge register, separated by 177 ppm. A given energy in joules is 13.60366 eV converted with e_{FOT} and 13.60607 eV with the SI charge; measured eV values are SI-register, and any cross-register comparison shows the offset systematically.

P-EIT-5. All SI fundamental constants carry the Radian-Veil offset (h −812, e +177, c +11 ppm); measure-then-fix locks the offset permanently, derivation-first removes it.
P-EIT-6. The electron-volt has two charge registers 177 ppm apart; measured eV are SI-register. Test: eV claimed to match a lattice form must be converted with the matching charge; mismatches reproduce the 177 ppm offset, not noise.

7. Conclusion

If time is the sole substance, the unit one chooses to measure energy in is a choice of clock. The joule counts seconds, the kilojoule-per-mole counts minutes, the electron-volt counts the spin-orbital turn; the conversions between them are the ordinary bridges between those time-scales. The claim is testable and it passes its sharpest test: the hydrogen ionization energy, a measured atomic quantity, is the product of the speed of light and the fine-structure constant taken up one register — $3^8/5$ kilojoules per mole — with the transcendental cancelling and Avogadro's number never invoked. The conversion constants are lattice values; the SI constants that approximate them carry a systematic offset that the 2019 redefinition has frozen into place. Energy is not a substance the universe spends; it is time, counted.

Figures

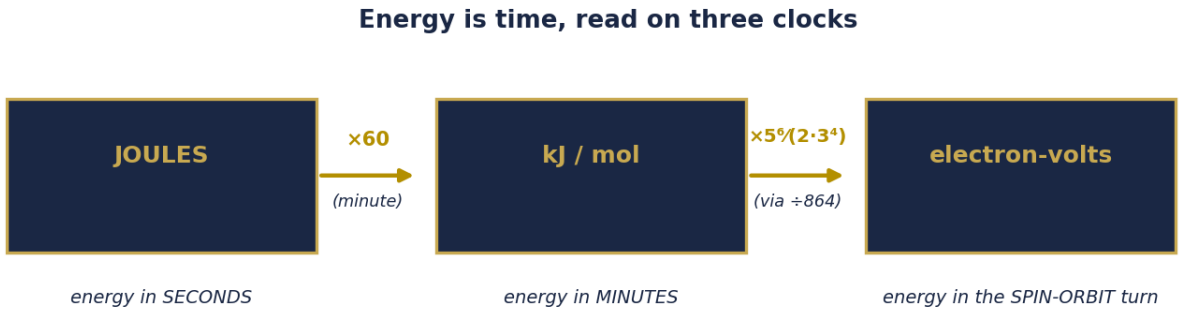

Figure 1. P-EIT-1: the three registers of energy as time. Joules count seconds; kilojoules-per-mole count minutes (×60); electron-volts count the spin-orbital turn (the eV↔kJ/mol factor $5^6/(2\cdot3^4)$ is derived from c via ÷864).

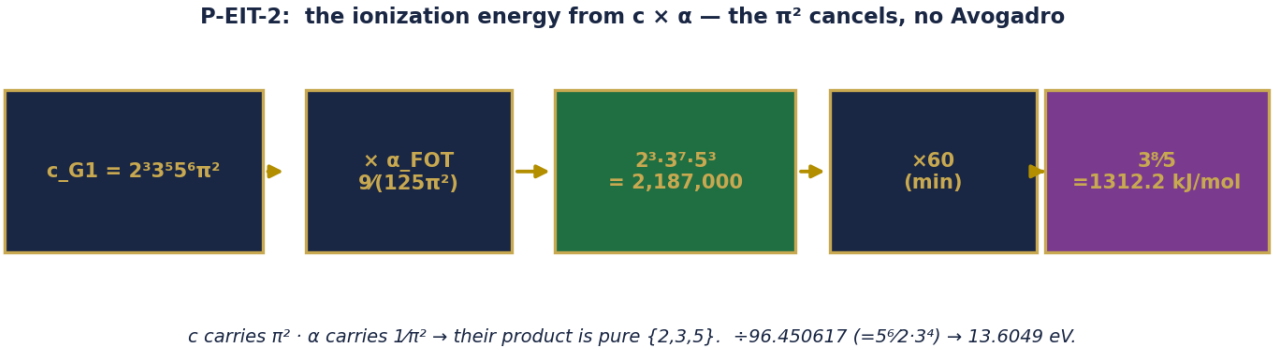

Figure 2. P-EIT-2: the hydrogen ionization energy from c × α. The π^2 of the speed of light cancels the $1/\pi^2$ of the fine-structure constant, leaving $2^3\cdot3^7\cdot5^3$; ×60 (the minute) gives $3^8/5$ = 1312.2 kJ/mol. Avogadro's constant never appears.

Table I. The Force-of-Time energy constants

Each conversion/constant in lattice form, with the SI value and the systematic offset. $\delta_G = 5^{10}/(2^4 \cdot 3^9 \cdot \pi^3) - 1$.

Quantity	UFOT (lattice)	UFOT value	SI value	offset
Joule register	energy in seconds	—	—	—
kJ/mol register	energy in minutes (×60)	—	—	—
eV register	energy in spin-orbit (864×360)	—	—	—
eV → kJ/mol	$5^6/(2\cdot 3^4) = c\cdot 5/(2^6\cdot 3^5)$	96.450617	96.485307	−359 ppm
elementary charge	(unit, +177 ppm)	$1.602459772\times10^{-19}$ C	$1.602176634\times10^{-19}$	+177 ppm
Avogadro constant	$2^5\times 3^6/(5\pi)^3$	6.018910362×10^{23}	6.022140762×10^{23}	−537 ppm
Planck constant	$5^3/(2\cdot 3\cdot\pi)\times10^{-34}$	$6.631455962\times10^{-34}$	6.62607015×10^{-34}	−812 ppm (SI)
speed of light	$2^3\cdot 3^5\cdot 5^6\cdot\pi^2$	299,789,233.7	299,792,458	+11 ppm (SI)
fine-structure α	$9/(125\pi^2)$	1/137.0778	1/137.036	veil face
H ionization (molar)	$3^8/5 = c\_G1\cdot\alpha\cdot 60$	1312.2 kJ/mol	≈1312.0	closure
H ionization (eV, FOT e)	J ÷ e_FOT	13.60366 eV	—	FOT register
H ionization (eV, SI e)	J ÷ e_SI	13.60607 eV	13.598 (1st)	SI register

References

[1] S. Daubney, *The Universal Force of Time — Master Compendium v5*, The Daubney Foundation (2026).

[2] NIST CODATA 2018, Fundamental Physical Constants.

[3] S. Daubney, *The Fine-Structure Constant*, The Daubney Foundation (2026).

[4] S. Daubney, *The Cascade — One Ladder from the Sodium Line to the Speed of Light*, The Daubney Foundation (2026).

[5] S. Daubney, *Avogadro's Constant Is Wrong* (Rev 2), The Daubney Foundation (2026).

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