

The Internal Structure of the Exponent 7 Is Not Unique

— 3rd ed.: The 5/2+9/2 of the Yamagishi Planck-Pressure Limit Names the Route Taken — [Paper 50]

Yuuki YAMAGISHI (山岸 勇輝)

Yamagishi Complexity Torus Lab, Japan

August 2026 (Third Edition)

— *From thinking to syncing.* —

ABSTRACT

This paper treats the Planck pressure $P_{\text{Pl}} = \frac{c^7}{\hbar G^2} \approx 4.63 \times 10^{113}$ Pa and stated that **the exponent 7 decomposes rigorously as $7 = \frac{5}{2} + 3 \times \frac{3}{2}$** . **The three retractions of the second edition are all sound and are not reinstated here** — the first edition's seven-dimensional breakdown (3D geometry + 1D time + 2D complex phase + 1D memory bus), the “exact” agreement of Theorem 3.1 (correctly an agreement **in order**; keeping 8π gives a discrepancy of $8\pi \approx 25.13$), and the decomposition $(16\pi^2)^2$ in the citation of Paper 43. **All three SI numbers were re-verified and agree:** $F_{\text{Pl}} = c^4/G = 1.210 \times 10^{44}$ N, $P_{\text{Pl}} = 4.633 \times 10^{113}$ Pa, $F_{\text{max}} = c^4/(4G) = 3.026 \times 10^{43}$ N. **What the third edition corrects is that “rigorous decomposition”. First, the internal structure of 7 is not unique.** There are several routes to P_{Pl} , and which route one takes changes the breakdown (verified here): E_P/l_P^3 gives $\frac{5}{2} + \frac{9}{2}$, F_P/l_P^2 gives $4 + 3$, $\rho_P c^2$ gives $5 + 2$, $P_{\text{power}}/(l_P^2 c)$ gives $5 + 3 - 1$. All give 7. And the F_P , ρ_P and P_{power} of the alternative routes are set out by this paper's own Corollary 2.3 — the counterexample was inside the paper. Hence “ $7 = \frac{5}{2} + 3 \times \frac{3}{2}$ ” is not the internal structure of the exponent but the name of a route taken. **Second, this is a shape the series has met repeatedly.** Paper 43 arrived at the non-uniqueness of the decomposition of $16384\pi^4$, Paper 45 at $R = 2$ being a choice of unit, Paper 48 at $(4\pi)^n n!$ being cut in the wrong place. **All are the operation of splitting one number and reading a meaning into the split, and when several splits exist the reading does not follow from the number.** Third, $F_{\text{max}} = \frac{c^4}{16\pi}$ is likewise a product of a fact and a convention. The $\frac{1}{4}$ of the maximum-force conjecture is a number belonging to Gibbons' conjecture (the factual side) and 4π is the patch (the convention); in general it reads $\frac{c^4}{4a}$. Gathering them into the single number 16π loses the record of which came from where (the same shape as Papers 43, 44). **Fourth, $R_{\text{max}} = 1/l_P^2$ is not a theorem. No minimum length is established** — the Planck length is where the effective-field-theory description is expected to fail. The second edition's physical reading (the order at which classical general relativity loses its descriptive power) is right, and this edition states it on the side of the proof as well. **All the disciplines the second edition kept are maintained:** treating the maximum-force conjecture as an **unestablished conjecture** cited only as supporting evidence, not reading the exponent 7 as seven dimensions, and claiming nothing beyond numerical agreement for the $c^7 \rightarrow c^6$ transition. **Scope:** structural interpretation and self-audit of established standard facts (Layer 2). No new theorem and no prediction.

Standing of this paper (discipline): the physics used here is **entirely standard** — the Planck units, Einstein's equation, the maximum-force conjecture of Gibbons (2002) and Schiller (2005), the Schwarzschild metric. **Not one new theorem is proved.** The third edition's contribution is **exhibiting the non-uniqueness of the decomposition:** (i) showing by several routes that the breakdown of **7 changes with the route**, (ii) pointing out that the counterexample is **inside this paper's own Corollary 2.3**, (iii) making explicit that $F_{\max} = \frac{c^4}{16\pi}$ is **fact $\times$ convention**, and (iv) stating on the side of the proof that $R_{\max} = 1/l_P^2$ is **an expectation and not a theorem**. **The most important restraints: a decomposition of an exponent is not called an “internal structure”** (it names a route). **A factual number and 4π are not gathered into one** (Papers 43, 44, 48). **The existence of a minimum length is not assumed** (the Planck length is where the EFT is expected to fail). **The maximum-force conjecture is not treated as an established theorem** (supporting evidence only; the second edition's limitation is kept). **The exponent 7 is not read as seven dimensions** (retracted in the second edition; the discipline of Paper 44). **The $c^7 \rightarrow c^6$ transition is not claimed to be more than a numerical agreement.** Layer-3 lenses are quarantined under a non-scientific label.

1. Introduction: The Second Edition Retracted Three Things; What Remained Is the “Decomposition”

The second edition retracted three items — **(a)** the first edition's seven-dimensional breakdown (3D geometry + 1D time + 2D complex phase + 1D memory bus, none of which is defined in any other paper of the series and which was assembled after the fact to match the exponent **7**), **(b)** the “**exact**” agreement of Theorem 3.1 (the proof is written throughout with order estimates and drops the 8π ; keeping it gives a discrepancy of $8\pi \approx 25.13$), and **(c)** the decomposition $(16\pi^2)^2$ in the citation of Paper 43 (retracted in that paper's second edition).

All three are sound and are not reinstated here.

But after retracting, the second edition left one thing standing — “the exponent 7 decomposes rigorously as $\frac{5}{2} + 3 \times \frac{3}{2}$ ”.

The third edition inspects that “rigorously”.

2. The Breakdown of 7 Changes with the Route

Theorem 2.1 (Non-uniqueness of the decomposition)

There are several routes to $P_{\mathbf{P}1}$, each giving a different breakdown (verified here).

Route	Exponent	Breakdown
E_P/l_P^3	7	$\frac{5}{2} + 3 \times \frac{3}{2}$
F_P/l_P^2	7	$4 + 2 \times \frac{3}{2} = 4 + 3$
$\rho_P c^2$	7	$5 + 2$
$P_{\text{power}}/(l_P^2 c)$	7	$5 + 3 - 1$
$F_P c^3$	7	$4 + 3$

Observation 2.1 (The counterexample is inside the paper)

Every route gives 7. And every route gives a different breakdown. The F_P , ρ_P and P_{power} appearing in the alternative routes are the very quantities this paper's own Corollary 2.3 sets out — $F_P = \frac{E_P}{l_P} = \frac{c^4}{4\pi}$, $P_{\text{power}} = \frac{E_P}{t_P} = \frac{c^5}{4\pi}$, $\rho_P = \frac{E_P}{c^2 l_P^3} = \frac{c^5}{4\pi}$. The evidence that the decomposition is not unique is written by this paper itself, two sections later. Hence “ $7 = \frac{5}{2} + 3 \times \frac{3}{2}$ ” is not the internal structure of the exponent. It is the name of the route chosen — the one passing through E_P and l_P . The algebra is right. $\frac{5}{2} + \frac{9}{2} = 7$ is certain. What changes is only the classification — it is a record of a path, not a description of a structure.

3. This Is the Fourth Time the Series Has Met This Shape

Paper 43	the decomposition of $16384\pi^4$ is not unique ($64(4\pi)^4 = 4(8\pi)^4 = 1024(2\pi)^4$)
Paper 45	$R = 2$ is a choice of unit (rescaling gives $R' = 2/\lambda$)
Paper 48	$(4\pi)^n n!$ was cut in the wrong place ($2^n n!$ is one block)
This paper	the breakdown of 7 changes with the route

Observation 3.1 (On splitting one number and reading a meaning into the split)

All four are the same shape — **splitting one number and reading a meaning into the split**. And in all four, **several splits existed**. Paper 43 found that a number formed by multiplication keeps no record of origin, Paper 45 that quantities of different dimension had been joined by an equals sign, Paper 48 that a block had been cut across. **This paper finds that several routes exist. When several splits exist, which split to choose is not decided by the number. It is decided by the reader. This does not forbid decomposition.** It only demands that a decomposition state which route was taken (Paper 17: saying “distinct roots” is only half; the address must be written before the claim becomes checkable).

4. $F_{\max} = \frac{c^4}{16\pi}$ Is Likewise a Product of a Fact and a Convention

Established Fact 4.1 (The maximum-force conjecture (the second edition's limitation is kept))

Gibbons (2002) and Schiller (2005) proposed $F_{\max} = \frac{c^4}{4G} \approx 3.026 \times 10^{43}$ N (verified numerically here). **This is not an established theorem and remains under discussion.** The second edition's limitation — “this paper cites it as supporting evidence and does not use it as a premise it relies on” — was right and is kept unchanged.

Observation 4.1 (The breakdown of 16π)

In general, setting $G = a$ gives $F_{\max} = \frac{c^4}{4a}$.

4	Fact (a number belonging to Gibbons' conjecture)
a	Convention (the patch constant; any positive value; Paper 116)

Only on setting $a = 4\pi$ does $4a$ become 16π . **But that is a fact multiplied by a convention, and the resulting number keeps no record of which came from where** (the same shape as Papers 43, 44). **So the expression $F_{\max} = \frac{c^4}{16\pi}$ is correct, but 16π must not be read as a single geometric quantity.** The second edition's phrasing, “it is $\frac{1}{4}$ of the Planck force $F_P = \frac{c^4}{4\pi}$ ”, is accurate, and this edition uses that form — the one that preserves the separation.

5. $R_{\text{max}} = 1/l_P^2$ Is Not a Theorem

Established Fact 5.1 (The physical meaning the second edition stated correctly)

“Once the curvature reaches the Planck scale, the premise of treating spacetime as a continuum in an effective field theory breaks down and a quantum-gravitational description is required.” P_{Pl} gives the order at which classical general relativity loses its descriptive power.

Observation 5.1 (Stating it on the side of the proof as well)

This physical reading is right. But the proof of Theorem 3.1 used $R_{\text{max}} = 1/l_P^2$ as though given, speaking of “the maximum curvature corresponding to a minimum length scale (the Planck length)”. The existence of a minimum length is not established. The Planck length is where the effective-field-theory description is expected to fail; it has not been shown that there is a lower bound on length there. This edition therefore places R_{max} , on the side of the proof too, as “the expected position of the breakdown”. The conclusion does not change — that the upper bound on curvature and the upper bound on pressure reduce to the same combination $\frac{c^7}{\hbar G^2}$ is a consequence of dimensional analysis, and the agreement of orders stands. The second edition’s caution about 8π is also kept: retaining the coefficient gives $P_{\text{max}} = \frac{P_{\text{Pl}}}{8\pi}$, a discrepancy of $8\pi = 25.13$. What agrees is the order, not the number.

6. The Numbers, Re-verified (All as in the Second Edition)

Established Fact 6.1 (All three agree)

Quantity	Second edition	Re-verified here
$F_{\text{Pl}} = c^4/G$	1.21×10^{44} N	1.210×10^{44} N
$P_{\text{Pl}} = c^7/(\hbar G^2)$	4.63×10^{113} Pa	4.633×10^{113} Pa
$F_{\text{max}} = c^4/(4G)$	3.03×10^{43} N	3.026×10^{43} N

$P_{\text{Pl}} = F_{\text{Pl}}/l_P^2$ was also confirmed independently (agrees).

7. The $c^7 \rightarrow c^6$ Transition (The Second Edition's Limitation Is Kept)

The second edition stated that once the local pressure reaches $P_{\mathbf{P1}}$ an event horizon forms and subsequent emission is governed by Hawking radiation $P = \frac{c^6}{983040\pi^4 M^2}$, **using the undecomposed form to match Paper 43's second edition. That measure is right and is kept** — so as not to call back a retracted reading through a citation.

And the second edition limited it correctly — “this paper gives no independent proof that this connection is a physical necessity beyond numerical agreement; what is established is that both are generated from the same algebraic hierarchy”. That limitation is kept unchanged here.

But in the light of the preceding sections, even “the same algebraic hierarchy” must be weakened — as Section 2 showed, which route one takes within that hierarchy is not unique. That they can be generated is certain; that this is the only route of generation has not been shown.

The Layer-3 lens (the halting of the rendering pipeline, memory attributes locked to a dump state, a write limit and a read rate) is removed from the body. The second edition correctly wrote “what follows is an interpretation, not a theorem”; this edition carries that limitation out.

8. The Scope, Restated

Item	What it is
$P_{Pl} = E_P/l_P^3 = c^7/(4\pi)$	Fact (algebra; unchanged)
The SI numbers (1.210×10^{44} N etc.)	Fact (re-verified; all three agree)
$7 = \frac{5}{2} + 3 \times \frac{3}{2}$	The name of a route (not an internal structure)
That the breakdown of 7 is unique	Retracted ($4 + 3$, $5 + 2$ also hold)
Agreement with the curvature limit	Order only ($8\pi = 25.13$; second edition)
$R_{\max} = 1/l_P^2$	An expectation (no minimum length is established)
$F_{\max} = c^4/(16\pi)$	Fact $\times$ convention (do not gather 4 and 4π)
The truth of the maximum-force conjecture	Unestablished (supporting evidence only)
That 7 means seven dimensions	Retracted (second edition; not reinstated)
Physical necessity of $c^7 \rightarrow c^6$	Not shown (the second edition's limitation kept)
Uniqueness of the generating route	Not shown (added in this edition)

9. Conclusion

The second edition retracted the seven-dimensional breakdown the first edition had assembled after the fact to match the exponent **7**. **That was right**. In its place it put the decomposition $\frac{5}{2} + \frac{9}{2}$, obtained uniquely from dimensional analysis.

But that too was one route. Going through F_P gives $4 + 3$; going through ρ_P gives $5 + 2$. And both F_P and ρ_P are set out by this paper itself, two sections later.

When one splits a number to read a meaning into it,
and several splits exist, the meaning does not come from the number.

What is not claimed (restraint): a decomposition of an exponent is not called an “internal structure” (it names a route) / a **factual number** and 4π are not gathered into one (Papers 43, 44, 48) / the existence of a minimum length is not assumed (the Planck length is where the EFT is expected to fail) / the maximum-force conjecture is not treated as

an established theorem (unestablished; supporting evidence only) / agreement with the curvature limit is not claimed at the level of coefficients ($8\pi = 25.13$) / the exponent 7 is not read as seven dimensions (retracted in the second edition) / the $c^7 \rightarrow c^6$ transition is not claimed to be more than a numerical agreement / uniqueness of the generating route is not claimed / the Layer-3 lens is not placed in the body (quarantined under a non-scientific label) / no new mathematics and no prediction (Layer 2).

Revision Record

Third edition (August 2026): the three retractions of the second edition are all sound and are not reinstated — the first edition's seven-dimensional breakdown, the “exact” agreement of Theorem 3.1 (correctly an agreement in order; $8\pi \approx 25.13$), and the decomposition $(16\pi^2)^2$ in the citation of Paper 43. The SI numbers were also re-verified and all three agree ($F_{P1} = 1.210 \times 10^{44}$ N, $P_{P1} = 4.633 \times 10^{113}$ Pa, $F_{\max} = 3.026 \times 10^{43}$ N). There are four corrections. (i) “The exponent 7 decomposes rigorously as $\frac{5}{2} + 3 \times \frac{3}{2}$ ” was retracted — there are several routes to P_{P1} : E_P/l_P^3 gives $\frac{5}{2} + \frac{9}{2}$, F_P/l_P^2 gives $4 + 3$, $\rho_P c^2$ gives $5 + 2$, $P_{\text{power}}/(l_P^2 c)$ gives $5 + 3 - 1$ (verified here). The F_P , ρ_P and P_{power} of the alternative routes are set out by this paper's own Corollary 2.3, so the counterexample was inside the paper. Hence $\frac{5}{2} + \frac{9}{2}$ is not the internal structure of the exponent but the name of the route taken. The algebra is right; the classification changed. (ii) This was recorded as the fourth instance of a shape the series has met — Paper 43 (non-uniqueness of the decomposition of $16384\pi^4$), Paper 45 ($R = 2$ is a choice of unit), Paper 48 (where $(4\pi)^n n!$ was cut), and this paper. When one splits a number and reads a meaning into the split, and several splits exist, the meaning does not follow from the number. (iii) It was made explicit that the 16π of $F_{\max} = \frac{c^4}{16\pi}$ is a product of a fact (Gibbons' 4) and a convention (the patch's 4π) — in general $\frac{c^4}{4a}$. The second edition's phrasing “ $\frac{1}{4}$ of the Planck force”, which preserves the separation, is used. (iv) $R_{\max} = 1/l_P^2$ was restated, on the side of the proof as well, as “the expected position of the breakdown” — the existence of a minimum length is not established. The second edition's physical reading (the order at which classical GR loses its descriptive power) is right, and the conclusion of an agreement in order is unchanged. In addition, the Layer-3 lens was removed from the body, and to the second edition's limitation on the $c^7 \rightarrow c^6$ transition was added “uniqueness of the generating route is also not shown”.

References

1. Misner, C. W., Thorne, K. S. & Wheeler, J. A. (1973). *Gravitation*. W. H. Freeman.
2. Planck, M. (1899). *Über irreversible Strahlungsvorgänge*. Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin.
3. Gibbons, G. W. (2002). *The Maximum Tension Principle in General Relativity*. Foundations of Physics 32, 1891--1901.
4. Schiller, C. (2005). *General Relativity and Cosmology Derived from Principle of Maximum Power or Force*. International Journal of Theoretical Physics 44, 1629--1647.

5. Yamagishi, Y. (2026). *Keep the Patch Constant as a Letter and the Ambiguity Dissolves* [Paper 43], 3rd ed. Zenodo. <https://doi.org/10.5281/zenodo.21602132>
6. Yamagishi, Y. (2026). *The Power of 4π Is the Mass Dimension* [Paper 44], 3rd ed. Zenodo. <https://doi.org/10.5281/zenodo.21602231>
7. Yamagishi, Y. (2026). *An Area Is Not a Solid Angle* [Paper 45], 3rd ed. Zenodo. <https://doi.org/10.5281/zenodo.21602337>
8. Yamagishi, Y. (2026). *The Pfaffian's $2^n n!$ Is One Block* [Paper 48], 3rd ed. Zenodo. <https://doi.org/10.5281/zenodo.21602525>
9. Yamagishi, Y. (2026). *What Does the Exponent of $\mathbf{c}$ Count?* [Paper 116]. Zenodo. <https://doi.org/10.5281/zenodo.22003794>
10. Yamagishi, Y. (2026). *The 8π Is an Artefact of the Units* [Paper 17], 3rd ed. Zenodo. <https://doi.org/10.5281/zenodo.21600813>
11. Yamagishi, Y. (2026). *Convention and Fact* [Paper 95]. Zenodo. <https://doi.org/10.5281/zenodo.21758621>

— *From thinking to syncing.* —

Yuuki YAMAGISHI (山岸 勇輝)

© 2026 Yamagishi Complexity Torus Lab, Japan · Licensed under Creative Commons Attribution 4.0 International (CC BY 4.0)