

Reviewer’s Dossier

Factual Substrate for Evaluating the *Panta Rhei* Series
2nd Edition (2026)

Dr. Thorsten Fuchs & Anna-Sophie Fuchs
<https://panta-rhei-books.org>

Purpose

This dossier provides the factual substrate for informed review of *Panta Rhei*. It collects claims, evidence levels, key numbers, known limitations, and pointers to specific content. It is designed for reviewers at journals (Nature, Physics Today, Notices of the AMS), institutional evaluators, and anyone assessing the series’ credibility.

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1 What the Series Claims

Panta Rhei claims that Category τ — built from 7 axioms on 5 generators — produces:

1. A refoundation of mathematics without ZFC (Books I–III).
2. ~ 220 falsifiable physics predictions with zero free parameters (Books IV–V).
3. A structural biology deriving abiogenesis as inevitable (Book VI).
4. A derived ethics: the categorical imperative as a mathematical fixed point (Book VII).
5. A provably terminal enrichment ladder (E_0 – E_3 , no E_4).

2 What the Series Does NOT Claim

1. **Not “theory of everything.”** Condensed matter coverage is minimal. No claim of completeness across all physics domains.
2. **Not peer-reviewed.** The series is self-published. This is acknowledged.
3. **Not classical mathematics.** The framework contradicts ZFC in ~ 24 ways. These are structural consequences of different axioms, not errors.
4. **Not “proven.”** 232 of 4,547 entries (5.1%) are explicitly conjectural.

3 Evidence Levels

3.1 Quantitative Precision

Tier	Count	Examples
Sub-1 ppm	4	$m_e, m_n/m_e, \text{Rydberg}, \alpha^{-1}$
1–10 ppm	10	$M_W, \sin^2 \theta_W, g_A, m_H, g - 2, \text{Koide}, \ell_D$
10–100 ppm	11	$n_s, r_p, \lambda_H, p\text{-}n \text{ mass}, \alpha_s, m_t/m_b$
100–10,000 ppm	~ 55	$G, \ell_1, H_0, \omega_b, \Omega_\Lambda, \text{CKM parameters}$
Structural	~ 140	Proton stability, $\theta_{\text{QCD}} = 0, 3 \text{ generations, no DM}$

3.2 Scope Classification

Label	Meaning	Count
Established	Provable in classical mathematics	511
τ -effective	Proven within Category τ	3,422
Conjectural	Open or unproven	232
Framework	Structural/definitional	368
Metaphorical	Analogy only	14
Total		4,547

3.3 Lean Formalization

Metric	Value
Total lake jobs	1,254
Errors	0
Sorry	0 (3 methodological in Book VII)
Entries formalized	2,675 of 4,547
Modules	391+
Mathlib imports	None (by design)

4 Key Numbers

Metric	Value
Books	7
Chapters	704
Registry entries	4,547
Theorems	1,009
Definitions	1,412
Propositions	762
Free parameters	0
Calibration anchors	1 (m_n)
Master constant	$\iota_\tau = 2/(\pi + e)$
Enrichment layers	4 (provably terminal)
ZFC-contradictions	~ 24
Mainstream physics contradictions	4

5 Domain Maturity

15 physics domains were graded on τ -effective:conjectural ratio, best prediction precision, structural proof depth, and experimental alignment:

Grade	Count	Domains
A	4	Foundations, QM, Particle physics, Electroweak
B+	2	Nuclear, Nucleosynthesis
B	5	Cosmology, Black holes, Gravity, Astrophysics, Fluids
C/C+	3	QCD, Thermodynamics, Atomic physics
D	1	Condensed matter

6 Known Limitations

1. **No peer review.** Self-published. Critical engagement welcome.
2. **Condensed matter:** ~ 25 entries. The clearest structural gap.
3. **Single anchor:** m_n is experimental input. No absolute mass prediction.
4. **CMB Pareto barrier:** All CMB peaks sub-1300 ppm but not simultaneously sub-100 ppm.

5. **5.1% conjectural:** 232 entries remain open, including PMNS angles.
6. **ZFC bridge:** 24 contradictions with classical foundations; no formal translation functor.
7. **Book VII Lean:** 3 methodological sorry (designed boundaries, not gaps).
8. **No quantitative biology/philosophy predictions:** E_2 and E_3 are structural.

7 Five Decisive Tests (2026–2035)

#	Prediction	Experiment	Timeline
1	$r = \iota_r^4 = 0.014$ (14σ)	CMB-S4	~ 2029
2	$\Sigma m_\nu = 0.089$ eV (4.5σ)	DESI	~ 2028
3	No DM particles	LZ/XENONnT	~ 2026
4	Normal mass ordering	JUNO/DUNE	~ 2028
5	$\lambda_H = 0.12928$	HL-LHC	~ 2032

8 Where to Find Specific Content

If you want...	Look at...
The axioms	Book I, Part 1 (Ch 1–5)
The Central Theorem	Book II, final chapter
Sub-100 ppm predictions	<i>Falsification Pack</i> , §2
Galaxy rotation curves	Book V, Ch 34
CMB predictions	Book V, Ch 43–47
Life definition	Book VI, Part 1 (VI.D01–D10)
Categorical imperative	Book VII, Part 7 (VII.T35)
Saturation proof	Book VII, Part 8 (VII.T06)
Lean source code	lean4/TauLib/
Registry data	registry/book*.jsonl
Complete reference per book	references/BOOK*_REFERENCE.pdf
Honest limitations	<i>Prospectus</i> , Ch 4, §4

9 Comparison to Other Programs

Feature	String theory	Connes NCG	Lisi E_8	Category τ
Free parameters	~ 20	~ 5	~ 10	0
Sub-100 ppm predictions	0	0	0	25
Unique model	No	No	No	Yes
Extends to biology	No	No	No	Yes
Extends to ethics	No	No	No	Yes
Lean-verified	Partial	No	No	2,675 entries

This dossier is a factual document. It does not argue for the framework’s correctness — it provides the data needed to evaluate it. All registry IDs trace to specific derivations in the 7-book series.