

Reader's Guide by Background

Panta Rhei, 2nd Edition (2026)
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How to Use This Guide

The seven books of *Panta Rhei* span mathematics, physics, biology, and philosophy. Not every reader needs all seven. This guide identifies the optimal entry point and reading order for your background.

1 Research Mathematician

Specialization: Category theory, algebraic geometry, logic, number theory.

Entry book: **Book I** (Categorical Foundations).

Reading order: I \rightarrow II \rightarrow III.

What you'll find: A complete refoundation of mathematics from a pre-categorical kernel. Natural numbers, primes, holomorphy, topology, and category theory are all *earned* from 7 axioms. Book I builds the boundary ($\mathbb{L} = S^1 \vee S^1$); Book II builds the interior via the Central Theorem; Book III derives the spectral forces and connects to the Millennium Problems.

Skip guide: Books IV–VII are optional unless you want to see the physics, biology, or philosophy consequences.

Prerequisites: Graduate-level algebra and familiarity with category theory (though the framework reconstructs it from scratch).

2 Theoretical Physicist

Specialization: QFT, particle theory, phenomenology, BSM physics.

Entry point: The *Falsification Pack* (free companion), then **Book IV** (Categorical Microcosm).

Reading order: *Falsification Pack* \rightarrow IV \rightarrow V \rightarrow backtrack to I–II as needed.

What you'll find: All Standard Model parameters derived from $\iota_\tau = 2/(\pi + e)$ with zero free parameters. Sub-10 ppm predictions for m_e , α , M_W , $\sin^2 \theta_W$, m_H , $g - 2$. Three generations from topology. Strong CP solved. Dark sector closure.

Skip guide: Book III (mathematical spectrum) can be skimmed. Books VI–VII are optional.

Prerequisites: Standard Model familiarity, QFT at the textbook level.

3 Cosmologist / Astrophysicist

Entry point: *Falsification Pack*, then **Book V** (Categorical Macrocosm).

Reading order: *Falsification Pack* → V (all parts) → IV (for particle content).

What you'll find: Galaxy rotation curves (20 galaxies, 0.067 dex RMS), CMB peaks at sub-1300 ppm, H_0 at -120 ppm, S_8 tension resolved, BAO scale, and the existential prediction $r = \iota_\tau^4$. Zero dark matter, zero dark energy — the dark sector is closed by capacity and holonomy.

Key prediction: $r = \iota_\tau^4 = 0.01357$, testable by CMB-S4 at 14σ .

4 Biologist / Origin-of-Life Researcher

Entry point: The *Categorical Genesis* companion (free, self-contained), then **Book VI** (Categorical Life).

Reading order: *Categorical Genesis* → VI → (optionally) VII Part 9 (mind and consciousness).

What you'll find: A structural definition of life via two predicates (τ -Distinction, SelfDesc). Abiogenesis as mathematically inevitable. Homochirality as universal (L-amino acids). Consciousness as a topological property. Black holes satisfying all life hallmarks.

No physics prerequisites. Book VI is designed to be readable with minimal physics background; the companion document requires none.

5 Philosopher

Specialization: Ethics, metaphysics, philosophy of science, theology.

Entry point: The Book VII Reference Sheet (free, 2 pages), then **Book VII** (Categorical Metaphysics).

Reading order: VII Reference Sheet → VII Part 1 (registers) → VII Part 7 (ethics) → VII Part 9 (mind) → VII Part 10 (Logos sector).

What you'll find: The categorical imperative derived (not postulated) as a j -closed fixed point. Seven archetypes. The enrichment ladder from mathematics to ethics. Saturation: the framework provably stops. No Forced Stance: neither theism nor atheism follows from the axioms.

Skip guide: Books I–V can be skimmed via reference sheets. Book VI Part 1 provides the necessary life-science bridge.

6 Lean / Formal Methods Researcher

Entry point: The *Lean Verification Report* (companion), then the `TauLib` source.

How to verify:

```
cd lean4/TauLib && lake build
```

1,254 jobs, 0 errors, 0 sorry (3 methodological sorry in Book VII).

What you'll find: A 391+ module Lean 4 library formalizing 2,675 mathematical objects from a 7-axiom kernel without Mathlib imports. The library spans foundations, holomorphy, physics constants, life predicates, and ethics.

Key interest: Alternate-foundation formalization (not ZFC-based). Comparison with Mathlib, Coq-HoTT, and Metamath.

7 Science Journalist / General Reader

Entry point: The *One-Page Overview* (Category τ at a Glance), then the *Series Prospectus*.

What the series claims: Nine axioms \rightarrow electron mass \rightarrow galaxies \rightarrow life \rightarrow ethics. One constant, zero parameters, 220 predictions. Testable by 2029.

If you want to go deeper: The *Categorical Genesis* companion is the most accessible long-form document.

Key question to evaluate: Does $r = \iota_\tau^4 = 0.014$ appear in CMB-S4 data around 2029? If yes, the framework is confirmed at 14σ . If no, it is falsified.

Asset Map

If you are...	Start with...	Then read...
Mathematician	Book I	II, III
Theoretical physicist	Falsification Pack	Book IV
Cosmologist	Falsification Pack	Book V
Biologist	Categorical Genesis	Book VI
Philosopher	VII Reference Sheet	Book VII
Lean researcher	Lean Report	TauLib source
Journalist	One-Page Overview	Prospectus

All companion documents available free at <https://panta-rhei-books.org/downloads>.