

Status: ACTIVE STANDARD (v1.1) | Release: August 2026 | Audience: Authors, Auditors, HAL Repositories

1. Foundational Core: Three-State Epistemic Minimum (TSEM)

TSEM mandates that every problem space is partitioned into Defensibly Possible (S_P), Provably Impossible (S_I), and Irreducibly Unknowable (S_U). By quarantining S_U, TSEM protects unprovable propositions from rhetorical overwriting and drives high-speed Dual-Engine Convergence (Bottom-Up Constructive vs. Top-Down Eliminative loops).

2. Compliance Matrix: Review Requirements

[MANDATORY]	TSEM Partitioning & Hash:	S_P vs S_I vs S_U, SHA-256 digest, reviewId, author.
[MANDATORY]	5-State Epistemic Verdict:	Unknowable, Undecidable, Impossible, Possible, Provable.
[MANDATORY]	Executive Plain-English Abstract:	Dense 2-3 sentence summary accessible to non-specialists.
[MANDATORY]	Auditable Logic Ledger (L1-Ln):	Itemized, equation-level verification (PASS, FAIL, GAP).
[MANDATORY]	Section 1: Claims & Axioms:	AMS notation theorem statements and explicit axiomatic foundation.
[RECOMMENDED]	Section 2: Gowers' Tricki:	Decomposition of the author's core trick vs. known barriers.
[CONDITIONAL]	Section 3: Proof-Code Audit:	Python/AST inspection and Lean 4 kernel verification (0 axioms).
[RECOMMENDED]	Section 4: Stress-Testing:	Boundary value tests (N=1, inf) and minimal counterexamples.
[MANDATORY]	Section 5: Remediation Vector:	Actionable, constructive guidance for the author to repair gaps.
[MANDATORY]	Section 6: BibTeX & HAL Metadata:	Standardized citation block with journal = {The Penta-Ledger}.

3. The Canonical 5-State Epistemic Scale (TSEM Expansion)

- #1 UNKNOWABLE (S_U): Impossible to ever know if true or false under chosen framework.
- #2 UNDECIDABLE (S_U): Known to have a truth value, but formally independent of axioms (e.g. Gödel).
- #3 IMPOSSIBLE (S_I): Logically impossible or contains an irreconcilable mathematical contradiction.
- #4 POSSIBLE (S_P): Algebraically coherent; clears plausibility, awaiting verified Lean4 closure.
- #5 PROVABLE (S_P): Fully proved and mechanized in machine-checkable Lean 4 with 0 unproven axioms.

4. Pre-Publishing Quality-Control Checklist (10 Quality Gates)

- [OK] 1. SHA-256 hash verified using sha256sum <file.pdf> and pasted correctly.
- [OK] 2. TSEM Tri-State Ontological Partition completed (S_P, S_I, S_U).
- [OK] 3. Assigned verdict strictly matches one of the canonical 5 states (or CODE_FLAGGED / PENDING).
- [OK] 4. Deductive vs Inductive boundary preserved: No simulation claimed as universal proof.
- [OK] 5. Abstract is written in plain English accessible to non-specialists (max 3 sentences).
- [OK] 6. Logic Ledger contains at least 3-5 items with explicit equation/section coordinates.
- [OK] 7. Tone is neutral, respectful, and focused purely on mathematical structure.
- [OK] 8. If paper includes code or Lean scripts, Section 3 (Proof-Code Audit) is fully populated.
- [OK] 9. Section 5.2 contains an actionable, constructive Remediation Vector for the author.
- [OK] 10. BibTeX citation block (journal = {The Penta-Ledger}) and HAL metadata are formatted.

5. Standardized BibTeX Citation Schema

```
@article{penta_ledger_2026_003,  
  title      = {Epistemic Plausibility Audit: [Submitted Manuscript Title]},  
  author     = {[Lead Auditor Name] and {The Penta-Ledger Verification Unit}},  
  journal    = {The Penta-Ledger},  
  year       = {2026},  
  month      = {08},  
  note       = {Cryptographic Document SHA-256: [hash]. Assigned Verdict: POSSIBLE.},  
  url        = {https://penta-ledger.org/reviews/[review-slug]},  
  doi        = {10.5281/zenodo.[zenodo-id]}  
}
```

6. European Open-Access Ingestion (HAL / Zenodo)

All published audits are converted to Archival Open Access e-prints and deposited under HAL identification numbers (Hyper Articles en Ligne) and registered with persistent DOIs via Zenodo.