Appendix XX – Complete Version History and Update Log

URCM Complete Version History (v4.7 to v0.1)

v4.7

Recursive Closure, Empirical Phase Initiation, and the Rise of Falsifiability

• Reintegrated the original v0.1 conceptual seed (“Black holes eat everything and somehow send it back in time to the Big Bang”), completing the theoretical recursion.

• Formalised URCM’s philosophical structure: from a speculative intuition to a self-repairing cosmological model with recursive closure.

• Declared the start of URCM Phase II: empirical validation and falsifiability-driven evolution.

• Launched empirical testing initiative: CMB anomalies (Planck), GPS clock asymmetries, decoherence cycles (NIST, JILA), and PBH flash re-ignition signatures (Fermi, HAWC).

• Developed metric-linked simulation layers with FDR corrections, anomaly filters, and operator signature detection.

• Introduced the idea of a GPT-based recursive assistant ('Barbarella') to support symbolic reasoning, simulation diagnostics, and operator evolution tracking.

• Finalised Appendix AH.X with lineage of legacy and fixed operators, metadata for convergence status, and symbolic tags.

• Established operator status taxonomy (active, deprecated, fused, unstable) and mapped retirement logic for legacy forms.

• Set threshold criteria for operator acceptance: self-restoration, entropy boundedness, and metric-predictive consistency.

• Chapters 15–17 to be refocused on simulation logs, empirical falsifiability, and recorded structural failure modes.

v4.6

Fix-All Operator and Full Metric Validation Integration

• Introduced the Fix-All entropy correction operator 𝐶̂\_fix, applied across all major URCM operators (𝑅̂, 𝑃̂, 𝑇̂ᵐ, 𝐵̂).

• Refactored Chapter 15 to include 𝐶̂\_fix, establishing it as the stabilisation anchor.

• Created Appendix AH (with AH.X and AH.Y) for operator lineage and fix insertion points.

• Validated metric tables 15.8 and 15.9 under Fix-All convergence; added colour-coded convergence maps.

• Rewrote consistency proofs; defined repair triggers and entropy thresholds in simulation appendix.

• Harmonised visual operator diagrams across Chapters 2–14.

• Declared v4.6 the first symbolically closed and recursively stable URCM release.

v4.5.2

Expanded Visual Tables and Simulation Commentary

• Enhanced Chapter 16 outputs with labelled simulation PNGs.

• Added explanatory blocks to Chapter 15.8–15.9 tables.

• Refined convergence group naming and added Fix-All annotations to table legends.

v4.5.1

Legacy Operator Recovery and Integration with Chapter 15

• Applied 𝐶̂\_fix to all Chapter 15 simulations.

• Introduced insertion rules and fix thresholds in 15.0.1.

• Added visual Fix-All sequences and operator warnings.

v4.5.0

Cure-All Operator Definition and Appendix AH Creation

• Finalised symbolic and simulation definition of 𝐶̂\_fix.

• Created Appendix AH and validated Fix-All in >95% of simulations (>10,000 iterations).

• Logged failure scenarios and correction pathways.

v4.4.2

URCM Proven Capable of Self-Repair Using Only URCM Operators

• Demonstrated complete internal repair using native operators only.

• Defined recursive resilience and internal logical closure.

• Formalised this as a system-wide self-consistency claim.

v4.4.1

Discovery of URCM Operator Generality and Emergent Self-Repairing Structure

• Observed emergent repair under recursive operator reconfiguration.

• Proposed operator deformability and adaptability.

• Introduced 'repair depth' as a diagnostic metric.

v4.4.0

Recursive Simulation Sweep to Validate Metrics Against URCM – Operator Fix Iteration Engine

• Ran 100–500 iteration simulations with recursive mutation/fix loop.

• Classified convergence types and traced operator sequences.

• Created early fix registry and convergence heatmaps.

v4.3.1

Initiated Chapter 15 – Construction of Cure-All Entropy Correction Mechanism

• Reframed Chapter 12.8 and 13.1 failures as critical.

• Introduced 𝐶̂\_fix as a composite repair operator.

• Embedded fix operator in all recursion pathways.

v4.3.0

Entropy Reset Test Broke Under Stress – Prompt Rebuild and Validation Phase Initiated

• Detected entropy failure beyond 6000 iterations in high-noise regimes.

• Defined limits of operator fidelity under decaying Λ(t).

• Laid groundwork for operator patch framework (Appendix AH).

v4.1.10

Thesis-Ready Milestone and Peer Review Integration

• Integrated final simulation validation, updated abstract, added key claims.

• Peer-reviewed outputs with Grok, OpenAI, ScholarGPT.

• Added Appendices Y, Z, and AA (Planck validation, subsystem unitarity, and closed-form recursion).

v4.0.3

Operator Visualisation and Glossary Expansion

• Created Appendices C–K.

• Formalised visual operator maps and symbolic diagrams.

v4.0.2

Philosophical Prelude and Stress Test Chapters

• Added humorous prelude (0.0) and 'Answer is 42' (0.0.1).

• Constructed stress-testing chapters and falsifiability sweep.

v4.0.1

Extended Cycle Simulations and Corrective Operators

• Ran deep-fidelity simulations and formalised recovery operator series.

• Updated recursion flow diagrams.

v4.0.0

Core Operator Structure and Finalised Cosmological Loop

• Removed ER=EPR from core; moved to Appendix D.

• Declared R = B ∘ S ∘ C as the canonical operator chain.

v3.0

Wormhole Foundation and Speculative Framework

• Treated ER=EPR as foundational.

• Speculated on bounce dynamics and inter-universal transfer.

v2.0

Unified Canonical Structure and First Formal Operators

• Merged v1.5.1–1.6.3 into full manuscript.

• Introduced I\_free and operator chaining (ℰ, ℬ, ℭ).

v1.6.3

Entropy Reset Operators and Hilbert Space Sketches

• Defined Hilbert mapping over bounce geometry.

• Introduced fidelity recovery metrics.

v1.5.1

Recursive Operator Introduction and Informational Loop

• Introduced R = B ∘ S ∘ C and the informational loop hypothesis.

v1.2

Black Hole Evaporation and Early Holographic Proposals

• Proposed CPT symmetry across bounces.

• Used entropy area-law and horizon encoding.

v1.0

Initial Concept Draft – Compression-Bounce Cycle

• Sketched the compression → bounce → reset loop.

• Inspired by Penrose and early LQC models.

v0.1

The original idea was that black holes eat everything and somehow send it back in time to the Big Bang.