

# **Cosmos v5: Coherence Operators and Emergent Geometry**

## **Abstract**

This publication provides a structured synthesis for Cosmos v5: Coherence Operators and Emergent Geometry, with claim-to-evidence framing and a validation path for downstream readers.

## **Keywords**

cosmos, research, publication

## **Main Content**

# Cosmos v5: Coherence Operators and Emergent Geometry

Cohera Lab

Thread: Cosmos

## Abstract

This publication provides a structured synthesis for Cosmos v5: Coherence Operators and Emergent Geometry, with claim-to-evidence framing and a validation path for downstream readers.

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### Cosmos v5: Coherence Operators and Emergent Geometry

**Digest slug:** cosmos-v5-coherence-operators-and-emergent-geometry

**Source:** [site/cosmos/digests/cosmos-v5-coherence-operators-and-emergent-geometry.html](https://site/cosmos/digests/cosmos-v5-coherence-operators-and-emergent-geometry.html)

## Structured draft body

Cosmos v5 · Coherence Operators and Emergent Geometry Cosmos v5: Coherence Operators and Emergent Geometry Date: 2026-02-22 · Thread: cosmos · Confidence: medium (formal proposal level) What was completed in this cycle Converted Section 8.1 from placeholder to a computable coherence-functional proposal. Converted Section 8.2 compatibility relation into a concrete norm-threshold criterion. Defined Section 8.3 as an operational geometry-reconstruction pipeline from distinguishability. 1) Coherence functional (8.1) Projected coherence is quantified with an explicit  $\ell_1$ -style off-diagonal measure:  $C(\rho|_{\text{loc}}) = \sum_{i \neq j} |\rho_{ij}|$  Selection is controlled with:  $F_n = E_n - \kappa C_n$ , minimized over recurrence windows. 2) Stability threshold (8.2) Compatibility is now explicit:  $\varepsilon = \|\Pi F - F|_{\text{loc}} \Pi\|_{\text{op}}$  Stable coherent sector condition:  $\varepsilon < \delta_{\text{coh}}$  Interpretation: crossing  $\delta_{\text{coh}}$  triggers representation drift and projected-sector decoherence. 3) Emergent geometry protocol (8.3) Distance from projected-state distinguishability (Bures/Fisher). Graph construction from pairwise distances. Metric tensor + curvature estimation on learned manifold. Research artifacts [research/drafts/cosmos\\_v5\\_integrated\\_20260222.tex](#) [research/drafts/cosmos\\_8.1\\_proposal\\_20260222\\_1640.tex](#) [research/drafts/cosmos\\_8.2\\_proposal\\_20260222\\_1640.tex](#) [research/drafts/cosmos\\_8.3\\_proposal\\_20260222\\_1640.tex](#) Next step Integrate these operators into [chatgpt/latex/cosmos.tex](#) as a single coherent Section 8 and run a numerical test matrix on archived corpus snapshots.

## Validation checklist

- Verify all nontrivial claims against the original source.
- Add explicit citations/DOIs where available.
- Mark confidence for each key claim (low/medium/high).