Operator XV — Prism

UNNS Operator Monograph Series — Volume XV

UNNS Substrate Project

"Phi-Scale sets the proportions.
Prism reveals the colors hidden within them."

Abstract

Operator XV, **Prism**, performs the first spectral differentiation of the Post-Collapse geometry. After Interlace ($XIII$) establishes proto-structure and Phi-Scale (XIV) organizes it into harmonic proportions, Prism separates the -scaled recursion into distinct spectral channels.

This Operator introduces chromatic differentiation: it turns proportional structure into analyzable, multi-band geometry, revealing the spectral identity of the new recursion.

1 Definition (Codex)

Let $\mathcal{W}_\Phi$ be the -scaled structure resulting from XIV.

Operator XV applies:

$$\mathcal{W}_\Phi \xrightarrow{XV} \{\mathcal{C}_\lambda\}_{\lambda\in\Lambda},$$

where $\mathcal{C}_\lambda$ are the *spectral channels* indexed by an abstract wavelength set Λ.

Core Action

- separates the -scaled weave into spectral threads,
- distinguishes structural frequencies,
- identifies coherent vs. incoherent channels,
- prepares the geometry for re-folding (XVI).

Prism is the Operator of *spectral revelation*.

2 Mathematical Analogue

Operator XV corresponds to:

- **Spectral decomposition** of a -scaled operator,
- **Fourier-like separation** into resonant modes,
- **Projection into eigenspaces** of scaling flows,
- **Coloring of quasi-periodic tilings** (a -driven analogue of Penrose color groups).

It is mathematically the "spectral prism" of -geometry.

3 Physical Analogue

Physical analogues include:

- **Optical dispersion** of light through a prism,
- **Wavepacket spectral splitting**,
- **Mode separation in quasicrystals**,
- **Band structure emergence** in condensed matter.

Prism is not energy emission (XI) — it is *structural* emission.

4 Geometric Interpretation in the τ-Field

Let the -scaled torsion field be:

$$\tau_\Phi(x) = \sum_k a_k \Phi^{\,k}\, \phi_k(x),$$

with ϕ_k basis shapes.

Operator XV extracts spectral channels:

$$\tau_\Phi(x) \xrightarrow{XV} \left\{ a_k \Phi^{\,k} \phi_k(x) \right\}.$$

Properties:

- the -scaled geometry splits into bands,
- resonant bands become distinct geometric strata,
- non-resonant bands may vanish under XVI,
- structure becomes chromatically stratified.

Prism performs -chromatic separation.

5 Dynamical Interpretation

Dynamically, Prism:

- identifies which -scaled components are growth-dominant,
- isolates stable vs. unstable spectral bands,
- distributes recursion across multi-channel pathways,
- prepares threads for folding into patterns (XVI).

This is the first multi-channel recursion dynamic of the new cycle.

6 Sobra/Sobtra Implications

After -scaling, Sobra/Sobtra differ subtly:

$$\text{Sobra}_{\Phi}, \quad \text{Sobtra}_{\Phi}.$$

Prism clarifies their spectral profiles:

$$XV: \quad (\text{Sobra}_{\Phi}, \text{Sobtra}_{\Phi}) \to \{\mathcal{C}_{\lambda}^{\text{Sobra}}\}, \{\mathcal{C}_{\lambda}^{\text{Sobtra}}\}.$$

Thus:

- new polarity differences become spectrally organized,
- Sobra/Sobtra asymmetry becomes banded,
- future folding (XVI) uses these bands to construct stable motifs.

Prism reveals the *polarity spectrum*.

7 Relation to Other Operators

Within the Post-Collapse Octad:

$$XIII \to XIV \to \boxed{XV} \to XVI \to XVII.$$

Key relations:

- XIII weaves threads, XIV sizes them, XV colors them.
- XVI will refold these colored threads into motifs.
- XVII will integrate the motifs into cognitive geometry.

Prism is the chromatic bridge between proportion and structure.

8 Glyph

The glyph for Prism is:

$$\bigcirc \rightarrow \|$$

circle = -scaled whole; vertical bars = separated spectral channels.

It symbolizes spectral fission of structure.

Conclusion

Operator XV splits the -scaled structure into spectral channels, revealing the geometric and dynamic "colors" of the new recursion. It transforms proportion into chromatic identity, preparing the substrate for refolding (XVI) into stable motifs.

Prism is the Operator that makes hidden structure visible.