3–6–9–12–15 MACHINE LADDER (CET OPERATOR FRAMEWORK)

INTRODUCTION

This document defines the full operator architecture of the Machine Ladder within the Cosmic Emergence Theory (CET).
This ladder consists of:

- 3 Mechanisms
- 6 Resonance Interactions
- 9 Archetypal Machines
- 12 Transitional Subsystems
- 15 Coherent Systems

Each tier refines system behavior, from root operators to emergent closure states. This is the complete, stable structure of the Machine Ladder.

SECTION 1 — THE 3 MECHANISMS (ROOT OPERATORS)

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1. Expansion – outward flow, propagation, encoding, growth.
2. Collapse – inward flow, integration, concentration, decoding.
3. Modulation – balance, routing, rephasing, stabilization.

SECTION 2 — THE 6 RESONANCE FUNCTIONS

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1. Boundary
2. Fusion
3. Amplification
4. Decoherence
5. Grouping
6. Separation

SECTION 3 — THE 9 MACHINES (ARCHETYPES)

Expansion Row:

- Dynamo — self-sustaining field loops
- Oscillator — rhythmic cycles
- Encoder — structure $\rightarrow$ information

Collapse Row:

- Reactor — concentrated transformation
- Filter — selective gating
- Decoder — information $\rightarrow$ structure

Modulation Row:

- Conductor — routing, stabilizing flows
- Catalyst — threshold lowering
- Regenerator — restoration/reset

SECTION 4 — THE 12 SUBSYSTEMS (TRANSITIONAL SYSTEMS)

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1. Dynamo → Reactor
2. Oscillator → Filter
3. Encoder → Decoder
4. Reactor → Conductor
5. Filter → Catalyst
6. Decoder → Regenerator
7. Conductor → Dynamo
8. Catalyst → Oscillator
9. Regenerator → Encoder
10. Dynamo → Oscillator
11. Reactor → Filter
12. Conductor → Catalyst

SECTION 5 — THE 15 COHERENT SYSTEMS (CLOSURE TIER)

Boundary Systems:
1. Boundary–Dynamo
2. Boundary–Filter
3. Boundary–Conductor

Fusion Systems:
4. Fusion–Reactor
5. Fusion–Oscillator
6. Fusion–Encoder

Amplification Systems:
7. Amplification–Dynamo
8. Amplification–Catalyst
9. Amplification–Decoder

Decoherence Systems:
10. Decoherence–Filter
11. Decoherence–Reactor
12. Decoherence–Regenerator

Grouping & Separation Systems:
13. Grouping–Oscillator
14. Grouping–Conductor
15. Separation–Encoder

SECTION 6 — MACHINE DEFINITIONS (OPERATOR FORMS)

Dynamo Operator:
$J' = J + dt\,(\alpha\ \mathrm{curl}(J) - \beta J)$

Reactor Operator:
$E' = E + dt\,(k_{in}\ J - k_{use}\ E - k_{loss}\ E^2)$

Oscillator Operator:
$X'' + 2\gamma X' + \omega^2 X = 0$

Conductor Operator:
$E' = E + dt\ \nabla(k\ \nabla E)$

Catalyst Operator:
$k' = k\ (1 + \chi)$

Filter Operator:
$x' = P_A(x)$ — projection into admissible region

Encoder Operator:
$I' = I + \lambda\ E(S)$

Decoder Operator:
$S' = (1–\mu)\ S + \mu\ D(I)$

Regenerator Operator:
$S' = S + dt\ \rho\ R\ (S■ – S)$

SECTION 7 — COHERENCE LAW (15-STATE ATTRACTOR)

A system governed by the 3 mechanisms, 6 resonance functions, and 9 operator-machines will converge toward one or more of the 15 coherent attractors, defined by:

$C = \Sigma\ w_{m,r}\ a_{m,r}^2 – \lambda\ \Sigma\ a_{m,r}\ a_{m',r'}$

Coherence increases ($dC/dt \geq 0$) until the system stabilizes in one of the closure states.

END OF DOCUMENT
