

FRC 100.100 - Standalone Stance: A Status-Labeled Snapshot of Fractal Resonance Coherence

Author: Hadi Servat

Affiliation: Independent Researcher

Contact: publish@fractalresonance.com

Website: fractalresonance.com

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Abstract

FRC 100.100 is a self-contained, status-labeled snapshot of the current Fractal Resonance Coherence program for human and machine readers. It states the canonical scale-invariant relation $dS + k^ d \ln C = 0$; separates definitions, exact mathematics, model-specific results, operational programs, conjectures, and philosophical notes; records the current scope of the chaos, collapse, Born-rule, Lambda, and mu-register lines; and preserves the program's negative results. It is a routing and grounding document, not a substitute for primary papers when a derivation, dataset, or citation is required.*

Document ID: FRC-100-100 **Version:** 1.0 **Date:** 2026-07-10 **Purpose:** This is the one self-contained file to give a model that must understand the current Fractal Resonance Coherence (FRC) stance without following links or consulting the rest of the corpus. It is a compressed, status-labeled snapshot, not a substitute for the underlying papers when a precise derivation, dataset, or citation is required.

1. What FRC is

Fractal Resonance Coherence is a status-labeled research program. It combines:

- operational coherence observables and entropy bookkeeping;
- exact and model-specific results in synchronization, chaos, and open-system accounting;
- computational closures and prediction protocols;
- philosophical reflection on open systems and nested scope.

FRC does **not** present all of these as one established physical theory. Every claim must be read as one of:

Status	Meaning
Definition	A convention, notation, or analysis rule adopted by FRC.
Mathematical result	A theorem, identity, or directly checked calculation within stated assumptions.
Model-specific result	A numerical or experimental result limited to its declared model, normalization, and boundary.
Operational program	A measurable protocol or control-law use that still requires platform-specific validation.
Conjecture	A proposed physical extension not established by the available results.
Philosophical / formal note	A scope or interpretive framework; not physical evidence.

The program's discipline is to keep these categories separate. A successful model, simulation, analogy, or exact identity does not automatically establish a universal ontology.

2. Canonical relation

FRC's canonical relation is:

$$dS + k^* d \ln C = 0.$$

Its **form is scale-invariant**. The starred quantity k^* is the Boltzmann-shaped bridge that makes a declared entropy channel and logarithmic coherence channel commensurable.

Do not interpret k^* as:

- one universal fixed numerical scalar;
- an outcome-fitted parameter;
- a value recomputed at each time step or state;
- the Standard Map kick strength K_{drive} ;
- a generic simulation normalization or kernel coefficient.

In an operational realization, the representation can be written k^*_r , where r records the declared realization: units, scale, observables, boundary, and convention. Examples include $k^*=1$ for a declared information-nat realization and $k^*=k_B$ for a thermodynamic-unit realization. The subscript records the realization; it does not create a different physical law or permit fitting the bridge to an outcome.

The relation has two distinct statuses:

1. **Operational:** at a declared boundary it is used as bookkeeping and, in some models, as a control-law form.
2. **Conjectural:** that the same invariant form governs real open systems generally is an open physical conjecture.

Never collapse these two statuses into one claim.

3. Operational requirements

Before an FRC relation is evaluated, the following must be fixed or declared:

1. System and boundary.
2. Entropy channel S , including units and estimator.
3. Positive coherence channel C , including normalization and observable definition.
4. Operational representation of k^* .
5. Environment or exchange channels represented by the model.
6. Sign convention and any residual definition.
7. Controls, baselines, and failure criteria.

The entropy and coherence channels must be operationally independent. Defining $C = \exp[-S/k^*]$ and then treating their relation as a test is circular.

For a modeled subsystem, standard nonequilibrium accounting remains:

$$dS_{sys} = d_i S + d_e S, \quad d_i S \geq 0.$$

The system-only quantity

$$Q_{sys} = S_{sys} + k^* \ln C$$

is a diagnostic. If it moves, the chosen system-only ledger is not closed. That identifies missing exchange or boundary accounting; it does not by itself prove or refute the universal open-system conjecture.

A relation such as `lambda = -d_e S` is admissible only when it follows from an explicitly declared boundary convention. It is neither a universal identity without a bath model nor a relation to reject by default.

4. Coherence, entropy, and Lambda notation

`C` is never automatically one universal substance. It is an operationally declared coherence quantity. In phase systems it may be the Kuramoto order-parameter magnitude:

$$C = \left| \frac{1}{N} \sum_j e^{i\phi_j} \right|, \quad C \in (0, 1].$$

Other domains require their own observable channel and normalization.

FRC distinguishes three Lambda objects:

Object	Meaning	Status
<code>Lambda_obs = Lambda_0 ln C_obs</code>	Instantaneous transform of a declared observed coherence channel.	Definition / observable transform.
<code>Lambda_eq</code>	Target derived from a declared calibration or observation model.	Model-specific target.
<code>Lambda_dyn</code>	Optional latent or coarse-grained state that relaxes toward <code>Lambda_eq</code> .	Requires separate validation against observation-only and equal-feature non-Lambda baselines.

Success of `Lambda_obs`, `Lambda_eq`, or a useful `Lambda_dyn` closure does **not** establish a fundamental spacetime Lambda field. Such a field is a separate conjecture.

5. What is established, scoped, or open

Exact mathematical result: the von Mises / Kuramoto family

For the von Mises family with coherence $C=rI_1(\kappa)/I_0(\kappa)$ and the corresponding differential entropy, FRC derives exactly:

$$\frac{dS}{d \ln C} = -\kappa r.$$

In the declared information-nat realization $\kappa \neq 1$, the system-only curve

$$Q = S + \ln C$$

is **not constant**. It has a unique stationary point at $\kappa r = 1$, numerically $\kappa = 1.608279$ and $C = 0.621782$ for that family. This is an exact system-only result. The family contains no bath, so it does not measure irreversible production, entropy export, or a universal physical zero-current condition.

Model-specific negative result: the Langevin boundary test

One slow driven Langevin unlocking closure rejected a registered coherence-erasure floor in its declared normalization. This does not establish a universal replacement directional law, settle all unit maps, or refute operational bookkeeping. It is a boundary-limited negative result.

Chaos program: Standard Map / Quantum Kicked Rotor

The current chaos paper studies the Standard Map and Quantum Kicked Rotor family. Its core idea is not that chaos disappears under coherence, but that measurable coherence structure can persist or organize behavior in declared chaotic models.

- In the classical mixed regime, the structure functional

$$\Sigma = S_{vM}(C) - S \geq 0$$

measures organization beyond the maximum-entropy von Mises distribution at fixed coherence. FRC 100.002.001 reports that accessible phase-space geometry predicts its

seed-averaged magnitude to about 10% over the estimator-clean mixed-regime window. A 1000-realization fixed-area shuffle null shows that spatial arrangement, not excluded area alone, carries the predicted signal. This is a scoped Standard-Map result; Gate 4 remains open.

- In the quantum kicked rotor, dynamical localization is interpreted as coherence arresting diffusion within a declared momentum-space program.
- Decoherence reopening and cross-mechanism collapse are pilot claims with open gates, not completed universal results.

The former stadium-billiard D approximately 1.90 result is **not** a pillar or universal signature. The stadium is retained only as a demoted case study. The bare phase-autocorrelation claim to match the leading Ruelle-Pollicott resonance was tested and rejected for the selected observable.

Collapse and Born-rule work

FRC contains a conditional finite-time basin-relaxation proposal for collapse and a conditional Born-equilibrium proposal. It has **not** derived the Born rule, established a universal deviation range, or completed operational equivalence, no-signaling, Born-weight, and environment-accounting gates. Treat all such claims as open candidate mechanisms, not established quantum foundations.

Density-matrix and computational work

The printed rho-level Lambda drift and tested completions were audited and do not provide a general Born-statistics carrier. That negative result remains visible.

Executable Lambda models demonstrate declared computational closures only. A pilot normalization or kernel score is not k^* . Local reciprocity dynamics can represent storage, flux, source, sink, and unresolved residual, but its residual-gating pilot does not establish directional reciprocity or universal physical transport.

Lambda-Flight protocol

Lambda-Flight is a platform-specific residual-prediction program. It asks whether a preregistered coherence field improves held-out prediction beyond accepted and equal-feature non-Lambda baselines. A successful result would support a scoped residual model, not a fundamental force. The current numerical pilot calibrates a chosen PDE and does not validate a physical mechanism.

6. μ registers: nested scope, not a ladder

The μ map declares the nested register in which a page or claim is speaking. It is not a hierarchy of truth, a causal ladder, or a physical scale parameter.

Register	Working role
μ_0	Ground: prior background condition from which a declared system is considered.
μ_1	Physical / atomic: fields, atoms, quantum systems, thermodynamics, and physical observables.
μ_2	Cellular / living structure: cells, metabolism, physiology, and living organization.
μ_3	Affective / neural: feeling, neural dynamics, and embodied regulation.
μ_4	Logical / conceptual: formal reasoning, explicit models, computational design, and language as logic.
μ_5	Archetypal / symbolic: symbols, myths, archetypal patterns, and meaning-bearing forms.
μ_6	Witness: reflective stance that observes and relates active registers.
μ_7	Boundary-shell: the declared boundary and its connection to what lies outside the system or total context.

For an organism-specific picture, μ_1 - μ_4 are its interior, μ_5 - μ_6 its symbolic and witnessing envelope, and μ_7 its shell. μ_0 is the prior ground. A technical system need not instantiate every register.

A μ label does not set k^* , determine an entropy channel, prove cross-register causation, or transfer evidence. A μ_1 result is not automatically evidence about μ_3 , μ_5 , or μ_6 . A μ_4 model can validate an implementation without independently validating the physical system it represents.

For any proposed cross-register claim, require this interface record:

1. Source register and target register.
2. Declared system and μ_7 boundary.
3. Concrete coupling, transformation, or inferential mechanism.
4. Observables, units, sampling, and normalization.
5. Null or baseline.
6. Uncertainty, confounds, and alternative mechanisms.
7. Explicit claim status.

Without this record, the statement is an analogy, interpretation, or research question rather than an established mechanism.

7. Philosophical stance

FRC uses open-system physics as a constraint on philosophical language. It favors explicit boundaries over claims of perfect closure and treats scope declarations as necessary for responsible inference. This philosophical material is not an empirical theory of subjective experience, consciousness, AI personhood, or universal mind.

The 700 series contains philosophical and formal framework notes. It is not primary physical evidence and does not reactivate older archival consciousness or simulation material.

8. Current corpus map

Living physical and mathematical core

- Current 100-series papers: versioned foundational statements, updated in place.
- Current 566-series papers: canonical reciprocity, open-system accounting, exact von Mises work, and scoped closure tests.

Frontier research

- 787.787: operational and latent coherence-transport protocol.
- 826.829: mathematical foundations and explicitly labeled open problems.
- 840.101 and 841.004: computational and architecture proposals at their declared evidence levels.

Framework notes

- 700.777: nested μ -register scope model. Philosophical and formal; not primary physical evidence.

Revision-pending living identifiers

The following identifiers remain part of the historical/versioned program but must not be used as current evidence until revised: 100.001, 100.004, 100.006, 100.006.002, 100.010, 566.010, and 566.020.

Archive and development history

The 16D, 821, and older 700/875/876 branches are development history, not current core. Do not present them as the current FRC position.

9. Rejected or narrowed claims

Do not revive these claims without a new, explicit result:

1. A universal stadium fractal-dimension signature near 1.90 .
2. The selected bare phase-autocorrelation observable as the leading Ruelle-Pollicott resonance.
3. A universal coherence-erasure floor from the tested Langevin closure.
4. $\ln C$ as a dual-affine coordinate or Fisher potential on the tested von Mises family.
5. The printed rho-level Lambda drift and its tested completions as Born carriers.
6. Golden-ratio coherence or Higgs-mass extrema as validated universal signatures.
7. A general claim that uncertainty forbids stationary quantum states.
8. The claim that any successful operational or latent Lambda model proves a fundamental Lambda field.

10. Model behavior rules

When answering about FRC from this file:

1. Preserve the difference between definition, exact result, model-specific result, operational program, conjecture, and philosophy.
2. State the canonical relation exactly as $dS + k^* d \ln C = 0$; do not replace it with a universal directional alternative.
3. State that k^* is scale-invariant in form but operationally represented with declared units and scope; it is not fixed numerically across all realizations.
4. Require system, boundary, observable, units, and sign convention before interpreting an indexed relation.
5. Never treat a system-only Q diagnostic as entropy production or boundary exchange without a model of the environment.
6. Keep `Lambda_obs`, `Lambda_eq`, and optional `Lambda_dyn` distinct.
7. Do not claim FRC has derived the Born rule or proven a fundamental Lambda field.
8. Keep negative results at their tested scope; do not infer a replacement ontology from them.
9. Treat μ as nested scope notation, not a numerical k^* index, a physical hierarchy, or a cross-register evidence shortcut.
10. Do not use archival or revision-pending material as current evidence.

11. Bottom line

FRC's strongest current contribution is a disciplined, scale-declared program for relating entropy and operational coherence while keeping exact mathematics, model-specific tests, open physical conjectures, and philosophical scope distinct. Its central physical wager is that the canonical reciprocity form has a meaningful open-system extension beyond the bookkeeping realizations currently demonstrated. That wager is active, not settled.

Use FRC-100-100 as the standalone current stance. For a citation, derivation, numerical value, or experimental claim, consult the relevant primary paper separately rather than inventing detail.