

RBFL/RBFT 6.0 Improved Unified Model

Architecture Blueprint and Full Derivation Dictionary

Prepared for Levi Haye - continuing from the improved derived RBFL Unified Law Candidate, with the phase-core ignition hypothesis kept as a separate speculative engineering appendix.

Status: speculative technical blueprint. This document does not claim established physics, does not replace general relativity, does not disprove dark matter, and does not claim that gravity or fusion can presently be engineered. Its purpose is to lock a clean architecture, preserve the improved candidate, and make every symbol traceable to the discovery layer from which it was derived.

Core public-safe sentence: RBFL/RBFT is a speculative, baryon-derived, 3D phase-field research programme investigating whether galaxy dynamics and related astronomical anomalies can be reproduced from baryonic structure, phase-state behaviour, and projection/impedance closure.

Source basis used: RBFL/RBFT 6.0 Improved Unified Model handover; RBFL Unified Law discovery report; RBFL Phase-Core Ignition Hypothesis report; and the uploaded RBFL Unified Law source package as the project source artifact.

1. Executive Lock

The current working model is the improved derived RBFL Unified Law Candidate, not the older locked-law-only framing. The correction is that the improved candidate preserves the locked acceleration skeleton while adding a derived phase-operator, baryonic phase impedance, pseudo-3D phase envelope, and separate observable maps. The new architecture must never use lensing, detector residuals, or engineering hypotheses as hidden force terms.

$$g_{RBFL}(x,t) = g_b(x,t) + A_{eff}(x,t) \sqrt{a_{\phi} |g_b(x,t)|} \hat{g}_b(x,t)$$

$$g_b = -\text{grad } \Phi_b, \text{laplacian}(\Phi_b) = 4 \pi G \rho_b$$

$$A_{eff} = A_{lock} S_{\text{phase}} D_{\text{phase}} G_{rot} B_{\text{switch}} H_{\text{proxy}} P_{3D}$$

$$P_{3D} = Z_{\text{phase}}^{-1}$$

The model should be built as a layered architecture. Each layer has a job: baryons define the source, the locked law defines the acceleration skeleton, the phase operator defines local baryonic response, phase impedance corrects projected/radial incompleteness, the pseudo-3D envelope reconstructs the missing vertical/line-of-sight structure, and observable maps translate the same field into rotation, lensing, and detector channels.

Non-negotiable separation: diagnostics may estimate, classify, or falsify A_{eff} . They must not become new gravity terms unless the theory is explicitly renamed, rederived, and retested.

2. Architecture Stack

Layer	Object	Mathematical role	Derived from / why it exists
1. Baryonic source	$\rho_b(x,y,z,t)$	The 3D baryonic density distribution: stars, gas, dust, bulge, disk, bar, compact baryons.	Locked source requirement. RBFL must begin with visible baryonic structure, not residuals.
2. Baryonic field	$\Phi_b \rightarrow g_b$	Poisson source to acceleration: $\text{laplacian}(\Phi_b) = 4 \pi G \rho_b, g_b = -\text{grad } \Phi_b$.	Standard baryonic baseline used before any RBFL phase term enters.
3. Locked acceleration law	$g_{RBFL} = g_b + A_{eff} \sqrt{a_{\phi} g_b } \hat{g}_b$	The fixed acceleration skeleton. It carries the low-acceleration square-root scaling.	Original locked-law/v7 core; retained because it yields BTFR-like outer scaling but is not alone sufficient.
4. Phase operator	A_{eff}	Multiplicative baryon-derived response amplitude.	Derived to answer whether A_b can be predicted from baryonic structure rather than fitted from residuals.
5. Phase impedance	$P_{3D} = 1/Z_{\text{phase}}$	Projection/transport correction for how the true 3D phase envelope appears in radial/projected data.	v4/v5 ratio discovery: $A_{\phi,obs} / A_{b,v7}$ exposed a hidden continuous impedance object.
6. Pseudo-3D envelope	$\Phi_{\text{phase}}(R,z) = A_{\text{carrier}} \text{sech}^2(z/h_{\phi})$	Reconstructed vertical/line-of-sight phase carrier from radial data.	v12 bridge from rotation-derived phase to lensing-style projection target.
7. Observable maps	$O_{rot}, O_{\text{lens}}, O_{\text{det}}$	Separate ways of reading the same field: rotation, lensing, residual detector.	v18 unification: one field, multiple channels, no mixing of observables into the force law.
8. Falsification gates	Frozen tests	Blind holdouts, onset prediction, 3D substitution, lensing amplitude prediction, benchmarking.	Required because the current closure is derived but not externally validated.

3. Derivation Chain

Locked law

The project began with a baryonic square-root acceleration response. In the outer low-acceleration regime it naturally gives a BTFR-like V_f^4 proportional to $G M_b A_{lock}^2 a_{\phi}$. That scaling is useful but not unique, so the novelty cannot be the square-root term alone.

Detector separation

The phase detector $A_{\text{phi,obs}} = (g_{\text{obs}} - g_{\text{b}}) / \sqrt{a_{\text{phi}} g_{\text{b}}}$ is computed after prediction. It is a diagnostic measurement, not the prediction rule.

Oracle sweep

Early sweeps scanned a local or galaxy-level multiplier. This was allowed only as an instrument scan to reveal whether a structured response existed.

Impedance discovery

The key object was the ratio between observed phase amplitude and predicted v7 operator. It became P_{3D} and its reciprocal Z_{phase} .

Closure compression

The broad sweep was compressed into a positive log-linear impedance closure using source, depth, boundary, radial, and rotation couplings.

Flat onset

$R_{\text{flat}}/R_{\text{d}}$ near 2.52 emerged as a phase-lock transition clue. It is currently discovered from V_{obs} , not yet blindly predicted from baryons.

Pseudo-3D bridge

Because SPARC-like data are mostly projected/radial, the model reconstructs a pseudo-3D envelope rather than claiming measured full 3D structure.

Lensing bridge

Weak-lensing ESD profiles close to R^{-1} were treated as a large-radius projection-channel clue. Γ_{lens} belongs to the lensing observable map, not the force law.

Engineering separation

The phase-core ignition hypothesis is a separate speculative engineering extension. It does not validate or modify the galaxy law.

4. Core Equations

Baryonic source:

$$\begin{aligned} \rho_{\text{b}}(x,t) &\rightarrow \Phi_{\text{b}}(x,t) \rightarrow g_{\text{b}}(x,t) \\ \text{laplacian}(\Phi_{\text{b}}) &= 4 \pi G \rho_{\text{b}} \\ g_{\text{b}} &= - \text{grad } \Phi_{\text{b}} \end{aligned}$$

Locked RBFL acceleration:

$$\begin{aligned} g_{\text{RBFL}}(x,t) &= g_{\text{b}}(x,t) + g_{\text{phi}}(x,t) \\ g_{\text{phi}}(x,t) &= A_{\text{eff}}(x,t) \sqrt{a_{\text{phi}} |g_{\text{b}}(x,t)|} \hat{g}_{\text{b}}(x,t) \end{aligned}$$

Effective phase response:

$$A_{\text{eff}} = A_{\text{lock}} S_{\text{phase}} D_{\text{phase}} G_{\text{rot}} B_{\text{switch}} H_{\text{proxy}} P_{\text{3D}}$$

Phase impedance bridge:

$$\begin{aligned} P_{\text{3D}} &= Z_{\text{phase}}^{-1} \\ Z_{\text{phase}}^{-1}(R) &\sim \exp[c_0 + c_1 G_{\text{source}} + c_2 G_{\text{depth}} + c_3 G_{\text{boundary}} \\ &+ c_4 G_{\text{depth}} G_{\text{radial}} + c_5 G_{\text{depth}} G_{\text{boundary}} \\ &+ c_6 G_{\text{source}} G_{\text{rotation}}] \end{aligned}$$

Observed phase detector - diagnostic only:

$$\begin{aligned} A_{\text{phi,obs}}(R) &= [g_{\text{obs}}(R) - g_{\text{b}}(R)] / \sqrt{a_{\text{phi}} g_{\text{b}}(R)} \\ g_{\text{obs}}(R) &= V_{\text{obs}}(R)^2 / R \end{aligned}$$

Pseudo-3D envelope:

$$A_{\text{carrier}}(R) = A_{\text{b,v7}}(R) P_{\text{3D}}(R)$$

$\Phi_{\text{phase}}(R, z) = A_{\text{carrier}}(R) \operatorname{sech}^2[z / h_{\Phi}(R)]$
 $\int \Phi_{\text{phase}} dz = 2 h_{\Phi}(R) A_{\text{carrier}}(R)$

Observable maps:
 Rotation: $V^2(R) = R \hat{r} \cdot g_{\text{RBFL}}(R)$
 Lensing: $\Delta\sigma_{\Phi}(R)$ proportional to $\Gamma_{\text{lens}} \int \Phi_{\text{phase}}(R, z) dz$
 Detector: $\Delta P_{\text{3D}}(R) = P_{\text{3D,oracle}}(R) - P_{\text{3D,pred}}(R)$

Outer locked scaling:
 $g_b(R) = G M_b / R^2$, $A_b \rightarrow A_{\text{lock}}$
 $g_{\text{RBFL}}(R) \sim A_{\text{lock}} \sqrt{G M_b a_{\Phi}} / R$
 $V_f^4 \sim G M_b A_{\text{lock}}^2 a_{\Phi}$
 $a_{\Theta} = A_{\text{lock}}^2 a_{\Phi}$

5. Full Dictionary With Derivation Provenance

The table below is intentionally broad. It includes the current law symbols, detector symbols, impedance/projection symbols, lensing-channel symbols, flat-onset symbols, and the separate phase-core ignition symbols. The provenance column states where each term entered the RBFL/RBFT discovery chain and whether it is locked, derived, diagnostic, or speculative.

Symbol / term	Definition	Derived from / provenance	Current status / allowed use
$\rho_b(x,y,z,t)$	3D baryonic density: stars, gas, dust, bulge, disk, bar, compact baryons, and time-dependent baryonic structure.	Layer 1 source requirement in improved handover and v18 architecture.	Predictive input. Must be independent of residuals.
Φ_b	Baryonic gravitational potential sourced by ρ_b .	Standard Poisson baseline carried into locked RBFL law.	Baseline field, not speculative by itself.
$\nabla^2(\Phi_b) = 4\pi G \rho_b$	Poisson equation connecting baryonic density to baryonic potential.	Baryonic source layer.	Source equation for the Newtonian/baryonic baseline.
g_b	Baryonic acceleration field, $g_b = -\nabla \Phi_b$.	Locked law and all rotation-curve comparisons.	Mandatory baseline before phase response.
\hat{g}_b	Unit vector in the direction of g_b , equal to $g_b/ g_b $.	Vector promotion of radial RBFL law.	Direction carrier for the phase acceleration term.
G	Newtonian gravitational constant.	Standard gravitational baseline.	Physical constant, not tuned by RBFL.
R	Galactocentric radial coordinate or projected radius depending on channel.	SPARC-style rotation and lensing maps.	Coordinate; must specify local radial or projected use.
z	Vertical or line-of-sight coordinate in pseudo-3D envelope.	Pseudo-3D reconstruction layer.	Proxy coordinate until full 3D data are available.
R_d	Disk scale length used to normalize radial structure.	SPARC-style baryonic geometry and flat-onset normalization.	Observable structural scale.
M_b	Baryonic mass or enclosed baryonic mass, depending on context.	Outer locked scaling and BTFR-like derivation.	Input mass; must be sourced from baryonic data.
$g_{\text{obs}}(R)$	Observed acceleration inferred from rotation, V_{obs}^2/R .	Detector side only.	Diagnostic comparator, not prediction input.
$V_{\text{obs}}(R)$	Observed circular velocity curve.	SPARC rotation data and flat-onset detection.	Used for scoring and current R_{flat} discovery; not for blind prediction.
$V_{\text{bar}}(R)$	Baryonic velocity contribution from visible matter.	Acceleration-ratio detector $\Phi = g_{\text{obs}}/g_b = V_{\text{obs}}^2/V_{\text{bar}}^2$.	Baseline comparison variable.
V_f	Asymptotic or flat outer velocity.	Outer locked BTFR-like limit.	Derived observable; used for scaling discussion.
a_{Φ}	Phase-carrier acceleration scale in the square-root response.	Locked acceleration skeleton.	Core scale; should not be retuned per diagnostic channel.
a_{Θ}	Outer locked acceleration scale, $a_{\Theta} = A_{\text{lock}}^2 a_{\Phi}$.	Outer BTFR-like derivation.	Derived scale; useful for comparing to low-acceleration families.

Symbol / term	Definition	Derived from / provenance	Current status / allowed use
g_phi	RBFL phase-response acceleration term: $A_{\text{eff}} \sqrt{a_{\text{phi}} g_{\text{b}} } \text{ghat}_{\text{b}}$.	v18 unified candidate.	Part of locked law once A_{eff} is specified.
g_RBFL	Total RBFL acceleration field, $g_{\text{b}} + g_{\text{phi}}$.	Locked RBFL law.	Main acceleration output. Do not add lensing/event multipliers inside it.
A_b	Baryon-derived phase response operator used in the law.	v7 phase operator and later improved candidate.	Predictive target; must be computed from baryonic structure where possible.
A_eff	Improved effective phase response including phase operator and P_3D correction.	Improved handover/v18 architecture.	Current candidate response amplitude.
A_lock	Outer locked reference amplitude reached in low-acceleration/flat regime.	Outer locked scaling and flat-onset carrier analysis.	Reference amplitude, not arbitrary lensing multiplier.
A_phi,obs	Observed residual-derived phase amplitude: $(g_{\text{obs}} - g_{\text{b}}) / \sqrt{a_{\text{phi}} g_{\text{b}}}$.	Detector side, Eq. 3.2 in unified report.	Diagnostic only; cannot define prediction in same step.
A_b,v7	Earlier v7 baryon-derived phase operator before improved P_3D correction.	v7 phase-operator stage.	Reference operator used to discover P_3D.
S_phase	Phase strength or saturation response, often approximated from baryonic surface density saturation.	v7 phase operator.	Predictive factor; should be derived from baryonic structure.
D_phase	Coherence/degree factor: smooth structure supports coherent response; fragmentation and sharp gradients suppress it.	v7 phase operator and handover dictionary.	Predictive factor; data quality dependent.
H_phase	True 3D height/envelope factor.	v7 operator; recognized as underdetermined with radial/projected data.	Desired true 3D factor, mostly unavailable in SPARC-like data.
H_proxy	Projected height/envelope proxy used when true 3D thickness/depth is missing.	Improved model replaces broad H_phase with proxy plus P_3D.	Temporary proxy; should be replaced by measured disk/gas depth.
G_rot	Rotational organization term: central-node rotation, disk shear, angular-momentum coherence, bar/bulge organization.	v7 phase operator and v9 closure coupling.	Predictive/structural term, not a residual fit.

Symbol / term	Definition	Derived from / provenance	Current status / allowed use
B_switch	Boundary/switching factor marking phase slips, disk-HI transitions, class changes, or sharp radial state changes.	v7 detector and phase-state classifications.	Predictive/classification factor; useful for detecting phase switching.
lambda_required	Local response ratio required by the data; depending on convention, observed/predicted or predicted/observed ratio used during discovery.	v4 sweep reinterpretation.	Discovery quantity only. Do not leave as free oracle in final law.
P_3D	Projected 3D phase correction: how the true 3D phase envelope appears through radial/projected data.	v5 naming of the hidden ratio. In the handover, $P_{\text{3D}} = Z_{\text{phase}}^{-1}$.	Derived bridge term. Candidate predictive closure, not a new force.
Z_phase	Baryonic phase impedance, reciprocal of P_3D.	v5 interpretation of projection/transport resistance.	Effective impedance/projection term; should be predicted from baryonic structure.
G_source	Source coherence/form factor entering pruned impedance closure.	v9/v18 pruned closure.	Closure variable: source coherence creates the carrier.
G_depth	Depth or radial/line-of-sight transport path factor.	v9/v18 pruned closure.	Closure variable: depth sets transport path length.
G_boundary	Boundary/slip form factor.	v9/v18 pruned closure.	Closure variable: boundary changes control phase slip.
G_radial	Radial-gradient or radial transport factor.	v8 coupled geometry then v9 pruning.	Closure coupling term, especially with G_depth.

Symbol / term	Definition	Derived from / provenance	Current status / allowed use
G_rotation	Rotation/shear organization form factor used in closure couplings.	v9 source-rotation coupling.	Closure variable: rotation organizes the carrier.
c0..c6	Coefficients in the pruned log-linear impedance closure.	v9/v18 compression of detector sweep into a fixed candidate formula.	Must be frozen before external validation; not per-galaxy tuning.
P_3D,pred	Predicted P_3D from the fixed impedance closure.	v18 detector residual map.	Prediction output for testing.
P_3D,oracle	Best local P_3D inferred from observed data during discovery.	Oracle sweep/detector side.	Discovery benchmark only; not part of deployable theory.
DeltaP_3D	Detector residual, P_3D,oracle - P_3D,pred.	v18 detector map.	Shows what closure still misses.
Phi(R)	Acceleration ratio detector, $g_{\text{obs}}/g_{\text{b}}$ or $V_{\text{obs}}^2/V_{\text{bar}}^2$.	v7 detector architecture.	Diagnostic state variable.
y(R)	Log acceleration-ratio detector, $\ln \Phi(R)$.	Detector-side compression.	Diagnostic only.
phase states	Weak/void, suppressed, locked, amplified, switching classifications.	v7/v5 detector landscapes.	Labels for state classification, not proof of field physics.
R_flat	Observed flat-onset radius where $ \ln V_{\text{obs}}/d \ln R $ becomes small and stable.	v10 flat-onset discovery.	Current discovery marker; must become baryon-predicted R_lock for stronger claim.
R_lock	Predicted/interpreted phase-lock radius.	Flat-onset interpretation and future closure goal.	Future predictive target from baryonic structure.
alpha_V	Local velocity slope, $d \ln V_{\text{obs}} / d \ln R$.	v10 flat-onset detector.	Diagnostic for current R_flat; not blind prediction input.
A_carrier	Phase carrier amplitude, usually $A_{\text{b},v7} P_{\text{3D}}$.	v12 pseudo-3D reconstruction.	Bridge from radial phase operator to field envelope.
Phi_phase(R,z)	Pseudo-3D phase envelope: $A_{\text{carrier}} \text{sech}^2(z/h_{\text{phi}})$.	v12 reconstruction.	Reconstructed field envelope, not directly measured full 3D data.
h_phi(R)	Phase-envelope height scale.	Pseudo-3D reconstruction and lensing bridge.	Proxy or fitted/reconstructed scale until true disk/gas thickness is available.
sech^2(z/h_phi)	Vertical envelope profile used as a simple bounded projection kernel.	v12 pseudo-3D demonstration.	Mathematical proxy; can be replaced if better 3D data demand it.
kappa_tilde_phi	Normalized phase-convergence proxy proportional to $2 h_{\text{phi}} A_{\text{carrier}}$.	v12 lensing-style projection proxy.	Not calibrated lensing convergence.
DeltaSigma(R)	Weak-lensing excess surface density.	v16 raw Brouwer/KiDS ESD bridge.	Observable lensing channel; separate from force law.
ESD_t(R)	Tangential excess surface density from raw lensing files.	v16 direct raw ESD ingestion.	Raw observable component.
bias(R)	Multiplicative bias correction for raw ESD.	v16 correction $\text{DeltaSigma}_{\text{corr}} = \text{ESD}_t / \text{bias}$.	Data correction, not RBFL physics.
DeltaSigma_corr	Corrected ESD, $\text{ESD}_t / \text{bias}$.	v16 raw ESD bridge.	Lensing-channel comparison data.

Symbol / term	Definition	Derived from / provenance	Current status / allowed use
Gamma_lens	Lensing-channel projection amplification/normalization factor.	v17 lensing amplitude gap.	Observable-map factor only. Must not enter g_RBFL.
Lambda_event / lambda_event	Event/lensing amplification estimate or exploratory range for special projected events.	Lensing/event detection stage.	Detection-stage parameter only; not universal force multiplier.
O_rot	Rotation observable map from g_RBFL to V(R).	v18 separate observable maps.	Legitimate readout channel.
O_lens	Lensing observable map from Phi_phase to projected DeltaSigma-like response.	v18 separate observable maps.	Legitimate readout channel, separate from acceleration law.
O_det	Detector residual map measuring closure miss.	v18 separate observable maps.	Diagnostic channel, not theory itself.

Symbol / term	Definition	Derived from / provenance	Current status / allowed use
C_phi	Phase-core coherence score for speculative fusion analysis.	Separate Phase-Core Ignition Hypothesis report.	Engineering-side hypothesis variable only; does not validate galaxy law.
G, S, Q, D, I in C_phi	Geometry, shear/coherence, confinement, density organization, instability penalty.	Phase-core ignition hypothesis.	Fusion-data test variables; must be controlled against standard plasma variables.
Y_fusion	Fusion yield/performance output in the speculative phase-core test.	Phase-core ignition hypothesis.	Target variable for statistical test only.
DeltaR2_holdout	Holdout improvement: $R^2(\text{augmented}) - R^2(\text{baseline})$.	Phase-core ignition falsification gate.	If ≤ 0 after controls, the engineering hypothesis fails.
C_crit	Critical coherence threshold in the phase-core ignition hypothesis.	Speculative threshold test inspired by old phase-node ignition analogue.	Hypothesis-only; not part of RBFL galaxy law.
PAD-T detector	Phase anomaly/detection workflow: broad sweeping first, then reverse-engineer candidate into rule.	RBFL detector-development memory and handover logic.	Discovery machine, not proof by itself.
Solar-system radio residual Delta t_phi	Potential Shapiro/radio-science residual after GR and known corrections.	Exploratory direct phase-detection track.	Separate discovery track. Do not alter frozen law with it yet.
Wide binaries	Potential low-acceleration test environment.	Future/diagnostic channel.	Not proof of RBFL unless tested with frozen prediction.
Bullet/lensing arcs	Projected field-response tracers in RBFL language.	Phase Detection Unit/lensing event channel.	Diagnostic only; not force-law multiplier.

6. What Is Locked, Derived, Diagnostic, and Speculative

Category	Includes	Rule
Locked skeleton	$g_{RBFL} = g_b + A_{eff} \sqrt{a_{phi} g_b } g_{hat}_b$; $g_b = -grad \Phi_b$; Poisson baryon source.	Do not change this because a new detector, lensing file, Doppler residual, or engineering idea appears.
Derived candidate closure	A_{eff} decomposition; $P_{3D} = Z_{phase}^{-1}$; pruned impedance closure.	May be improved only by frozen, documented versioning and re-testing on holdouts.
Diagnostic/detection	$A_{phi,obs}$, $P_{3D,oracle}$, ΔP_{3D} , phase states, R_{flat} from V_{obs} .	Can reveal structure and failure zones but cannot define prediction in the same step.
Observable maps	O_{rot} , O_{lens} , O_{det} ; Γ_{lens} in lensing channel.	Separate readouts of the same field. Projection factors stay outside g_{RBFL} .
Speculative engineering	Phase-core ignition, PAD-T engineering/decoherence, radio residual direct phase detection.	Separate appendices/tracks until independently validated and formally integrated.

7. Falsification Matrix

The improved model becomes scientifically stronger only by freezing the closure and testing it outside the discovery set. The current evidence ceiling is mostly caused by radial/projected data. A true RBFL test requires replacing proxies with measured 3D baryonic structure where possible.

Gate	Pass condition	Fail condition	Why it matters
Frozen SPARC/holdout closure	v9/v18 predicts A_{eff}/P_{3D} on unseen galaxies without per-galaxy refit.	Performance collapses or only works with per-galaxy tuning.	Tests whether the impedance formula is real or an after-the-fact compression.
Blind R_lock prediction	R_{lock}/R_d predicted from baryonic structure before looking at V_{obs} .	Observed R_{flat} must be used to locate the transition.	Turns flat onset from discovery marker into predictive physics.
3D substitution	H_{proxy} improves when replaced by real disk thickness, gas depth, warp, bar geometry.	Measured 3D data do not improve or contradict the closure.	Directly tests the pseudo-3D explanation.
Raw lensing amplitude	DeltaSigma shape and normalization predicted with fixed Γ_{lens} bands.	Requires refitting Γ_{lens} per sample or event.	Separates lensing projection from hidden force tuning.
Benchmark parity	Compared against MOND/RAR and NFW/Burkert under identical inputs and holdouts.	RBFL only wins under unequal scoring or special subsets.	Critic-safe external comparison.

Gate	Pass condition	Fail condition	Why it matters
Phase-core fusion appendix	C_phi improves holdout prediction beyond standard plasma variables.	No residual threshold after controls; shuffled C_phi performs similarly.	Keeps engineering idea falsifiable and separate.

8. Development Blueprint

Data ingestion

Create objects for rho_b(x,y,z,t), projected Sigma_b(R), gas components, disk thickness, warp, bar/bulge geometry, rotation curves, lensing ESD, and metadata. Every field must record whether it is measured, inferred, or proxy.

Baryonic source solver

Compute Phi_b and g_b from the available baryonic mass model. For incomplete datasets, explicitly label the approximation as projected/radial.

Phase operator engine

Compute S_phase, D_phase, G_rot, B_switch, H_proxy, and A_lock from declared observables. No use of V_obs residuals inside prediction mode.

Impedance closure engine

Compute P_3D,pred from the frozen pruned closure. Keep c0..c6 versioned and immutable during holdout tests.

Pseudo-3D envelope builder

Construct A_carrier and Phi_phase(R,z). Label this as reconstructed pseudo-3D unless true 3D baryonic data are used.

Observable mappers

Generate V_pred(R), DeltaSigma_pred(R), and DeltaP_3D only after prediction. Keep Gamma_lens in the lensing map, not in g_RBFL.

Report and audit layer

For every run, output formulas, parameter versions, dataset splits, data provenance, residuals, failure zones, and benchmark comparisons.

9. Appendix A - Phase-Core Ignition Boundary

The phase-core ignition hypothesis is preserved only as a separate speculative engineering extension. Its central test is not whether fusion proves RBFL. It is whether a coherence variable adds predictive power after ordinary fusion variables and machine state are controlled.

$$Y_{\text{fusion}} = f(P_{\text{input}}, n, T, \tau_E, \text{machine}, C_{\text{phi}})$$

$$C_{\text{phi}} = w_1 G + w_2 S + w_3 Q + w_4 D - w_5 I$$

$$\Delta R_2_{\text{holdout}} = R_2(Y_{\text{augmented}}) - R_2(Y_{\text{baseline}})$$

Falsifier: if C_phi adds no holdout predictive gain beyond input power, density, temperature, confinement time, magnetic field, volume, machine state, and instability controls, the phase-core route fails this gate.

This appendix must not be mixed into the galaxy law. It shares the structure-first intuition - structure first, coherence second, threshold third - but it does not validate the RBFL Unified Law Candidate.

10. Public-Safe Closing Statement

The improved RBFL/RBFT 6.0 candidate is now best described as a layered, falsifiable architecture: baryons source a baseline field; the locked law adds a saturated phase response; the phase operator tries to predict amplitude from baryonic structure; baryonic phase impedance corrects projected 3D incompleteness; pseudo-3D reconstruction creates a lensing-style field envelope; and separate observable maps read the same field through rotation, lensing, and detector residuals.

The work is not proven. Its strongest current claim is architectural: the discovery chain has compressed a large amount of residual structure into baryonic phase-operator and projection/impedance terms. The next proof burden is external validation with frozen closures, blind onset prediction, true 3D baryonic substitutions, raw lensing amplitude tests, and fair comparison against MOND/RAR and halo baselines.

11. Source Notes

Source 1: RBFL/RBFT 6.0 Improved Unified Model handover - used to lock the improved architecture, the separation of law/diagnostic channels, the $P_{3D}=Z_{\text{phase}}^{-1}$ correction, the warning not to move lensing/event amplification into the law, and the separation of phase-core ignition as an engineering appendix.

Source 2: RBFL Unified Law discovery report - used for the detailed v7 to v18 discovery chain, core equations, phase operator, detector equations, impedance discovery, flat-onset, pseudo-3D reconstruction, lensing bridge, symbol dictionary, and falsification targets.

Source 3: RBFL Phase-Core Ignition Hypothesis report - used only for the separate speculative fusion-data test variables, C_{phi} score, holdout-gain falsifier, and boundary statement.