

# Oscillatory Field Genesis Phase IIIb: Coexistent Drift-Matter Cosmology (CDC Extension)

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April 27, 2025

## 1 Phase IIIb Patch Overview

Oscillatory Field Genesis (OFG) Phase IIIb refines Phase III by recognizing the necessity of residual dark matter components alongside drift-induced structure formation. Rather than replacing dark matter, OFG Phase IIIb expands the framework into a Coexistent Drift-Matter Cosmology (CDC).

## 2 Core Additions

### 2.1 Residual Dark Matter Acknowledgment

We introduce an explicit term  $T_{\mu\nu}^{\text{RDM}}$  representing residual dark matter:

$$G_{\mu\nu} + \Delta_{\mu\nu}^{\text{drift}} + \Delta_{\mu\nu}^{\text{memory}} + \Delta_{\mu\nu}^{\text{constraint}} = 8\pi (T_{\mu\nu}^{\text{baryons}} + T_{\mu\nu}^{\text{radiation}} + T_{\mu\nu}^{\text{RDM}})$$

where:

- $T_{\mu\nu}^{\text{baryons}}$ : Normal matter.
- $T_{\mu\nu}^{\text{radiation}}$ : Photons and neutrinos.
- $T_{\mu\nu}^{\text{RDM}}$ : Residual dark matter (e.g., weakly interacting massive particles, axions, or unknown forms).

### 2.2 Memory Drift Role

Memory drift fields ( $\Phi$ ,  $\Theta$ ) continue to:

- Seed inflation.
- Influence structure formation (e.g., void edges, filament enhancement).
- Modify local gravitational fields subtly beyond dark matter-only predictions.

### 2.3 Coexistence Principle

Both drift and dark matter co-govern cosmic evolution:

$$\text{Cosmic Evolution} = \text{Drift Effects} + \text{Dark Matter Effects} + \text{Ordinary Matter Effects}$$

Memory drift acts as a **\*\*gravitational flavor\*\***, subtly shaping cosmic structures beyond what  $\Lambda$ CDM predicts alone.

### 3 Minimal Mathematical Changes

The action and field equations remain unchanged except for explicit addition of  $T_{\mu\nu}^{\text{RDM}}$  on the right-hand side. No re-derivation of drift dynamics required.

### 4 Testing Goals for CDC

- Verify that combined drift + dark matter produce correct lensing, clustering, and Bullet Cluster results.
- Identify subtle deviations from  $\Lambda$ CDM in voids, filaments, and supervoid alignments (memory signatures).
- Predict drift-specific gravitational wave background features distinct from inflation-only models.

*“Memory and matter drift together through the breathing cosmos.”*