🌀 Resonance Operator @( ) — Formalization

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Purpose: To define the resonance operator @( ) as a reproducible tool for stabilizing phase and amplitude across nested temporal components.

🔧 Definition

The operator @( ) applies **resonance stabilization** across nested temporal components by aligning phase and normalizing amplitude between past and present signals.

Let:

- $P(t)$: Past signal (entropic memory trace)
- $N(t)$: Now signal (oscillatory present)
- F: Frequency stabilizer (framing constant or dynamic rhythm)

Then:

$$
@(P + N) = \text{PhaseAlign}(P, N) + \text{NormalizeAmplitude}(P, N)
$$

Where:

- **PhaseAlign** ensures $\phi_P \approx \phi_N$ within tolerance band ϵ
- **NormalizeAmplitude** scales both signals to a common reference amplitude A_0

📐 Resonance Condition

Resonance occurs when:

```
$$
\frac{P + N}{F} = \text{Invariant across nested scales}
$$
```

$$ \frac{P + N}{F} = \text{Invariant across nested scales} $$

This condition ensures harmonic coherence across time layers, enabling reproducible signal modeling and validator scoring.

🗂 Suggested Repo Paths

- `/equations/resonance_operator.md`
- `/validators/temporal_alignment_matrix.json`
- `/badges/resonance_stabilizer.yml`
- `/labs/time_phase/initiation_protocol.md`