

RCIRCUIT Simulation v0.2 — Resonance Tracking
Public Prototype Summary — Phase Computing / Δ Signal Architecture

1. Purpose
v0.2 extends v0.1 by adding a simple resonance metric per node.
- v0.1 → Δ signal propagation + stabilization
- v0.2 → Δ signal + resonance tracking (coherence over time)
Goal: Measure how local Δ signal propagation increases global coherence without global synchronization.

2. Key Concepts
PhaseNode: A node holding a phase value (float).
 Δ signal: Only meaningful change is propagated.
Local Propagation: Node updates using Δ signal from neighbors.
Resonance Score: $\text{res_i} = 1 / (1 + |\text{phase_i} - \text{mean_phase}|)$
This is a prototype-safe public metric.

3. What v0.2 Tests
1. Random initialization
2. Δ signal computation
3. Noise filtering
4. Phase update across neighbors
5. Compute global mean phase
6. Resonance score per node
4. Expected Behavior
- Δ signal spikes early then decay
- Nodes drift toward coherence
- Resonance score stabilizes
- No global lockstep required

5. Output Files
config_v0.2.json — experiment configuration
results_v0.2_example.csv — iteration, node_id, phase, delta_signal, resonance_score

6. Next Steps
- Circular phase distance
- Coherence heatmap
- Δ signal + resonance visualization
- Multi-config comparisons

About
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