Phase Compute OS — Interconnect Crisis v2.1 (NVLink Edition)

1. The Real Bottleneck: Movement, not Compute

AI systems fail not from insufficient FLOPS but from data-movement instability:

- propagation delay

- hop-count multiplication

- bandwidth saturation

- NVLink power-per-bit runaway

2. NVLink Scaling Limits

• Hop Count Explosion → synchronization collapse

• Physical Distance → timing skew & phase drift

• Thermal Coupling → bandwidth degradation

• Power Wall → interconnect power > compute power

3. Interconnect Collapse Outcome

Latency → oscillation

Power → runaway

Coherence → loss

Scaling → stops

4. RCIRCUIT Approach

Local phase-coherent compute

Minimal movement

Sub-linear energy scaling

5. Architecture Shift

GPU = FLOPS

RCIRCUIT = PHASE

— HROS RME Lab (Phase Compute OS Initiative)