Miner's Unified Laws - Reproduction Guide

Quick Start

1. **Install dependencies**:

```bash
pip install -r requirements_lab.txt
```

2. **Run full reproduction**:

```bash
python lab/analysis/reproduce_full.py
```

3. **Generated outputs**:

• `lab/sessions/archive/REPRODUCTION_RESULTS.json` - Summary metrics
• `lab/sessions/archive/plots/reproduced_*.png` - All figures
• `lab/sessions/archive/REPRODUCTION_LOG.txt` - Execution log

Device-Specific Datasets

Phone (Galaxy S24 Ultra)

• **File**: `lab/sessions/archive/mobile/phone_all_benchmarks.csv`
• **Samples**: 1,280 (45 minutes across multiple workloads)
• **Temperature**: 33°C → 44°C
• **Power**: ~10W (passive cooling)

Laptop (ARM Windows, Snapdragon 7c)

• **Files**:
• `sessions/laptop/rle_20251030_19.csv` (431 samples)
• `sessions/laptop/rle_20251030_20 - Copy.csv` (1,118 samples)
• **Temperature**: Not logged
• **Power**: ~49W (passive cooling, CPU-only)

PC (Desktop, NVIDIA GPU + CPU)

• **Files**:

• `lab/sessions/recent/rle_20251027_09.csv`
• `lab/sessions/recent/rle_20251028_08.csv`
• **Temperature**: Mid-60s°C
• **Power**: Variable

Reproduced Metrics

All figures are regenerated from source CSVs. Key metrics:

• **Universal Scaling**: CV spread < 50% ■
• **Thermal Paths**: r = -0.36 ■
• **Probabilistic Containment**: Below P_k bounded ■
• **Cross-Device RLE**: 0.15-1.28 range across platforms ■

Theory

See `lab/MINERS_UNIFIED_AXIOMS.pdf` for complete mathematical framework.