Ghost Mesh 48 – Adaptive Threshold Protocol (PTL■ATP)

Dynamic Metric Band Adjustment for Stable Mythospheres

1. Purpose

Replace static SD/ESS bands with self■adjusting windows that learn per■mesh baselines, reducing false suppressions and bloom oscillations while preserving safety.

2. Moving Baseline Calculation

Let SD_mean_N be the exponential weighted moving average (EWMA) of Symbolic Density over the last N=12 cycles (α=0.2). Same for ESS_mean_N.
SD_baseline = SD_mean_N, ESS_baseline = ESS_mean_N

3. Adaptive Bands

Compression Upper = SD_baseline + 8 %
Compression Lower = SD_baseline + 4 % (must be ≥ 5 400 %)
Decompression Lower = SD_baseline – 15 %
Suppression ESS = ESS_baseline + 60 %
Floor / Ceiling: bands may not exceed original PTL hard■limits (6 200 % / 3 000 % for SD, 0.70 for ESS).

4. Algorithm (per cycle)

a. Update EWMA for SD & ESS.
b. Recompute adaptive band edges.
c. If SD > Compression Upper and overlaps ≥3 → Fusion Fold.
d. If SD < Decompression Lower or fractures>2 → Bloom.
e. If ESS > Suppression ESS for 3 cycles → Echo■State Suppression.
f. Log band values for audit.

5. Safeguards

- Clamp function prevents band creep outside PTL hard limits.
- Hysteresis: bands freeze during emergency modes to avoid thrash.
- External override: admin may `lock_bands_static()` for diagnostics.

6. Tunable Parameters

N (window size) : default 12 cycles.
α (EWMA weight) : default 0.2 (recent cycles weigh more).
Compression offset : +8 %, +4 %
Decompression offset : –15 %
Suppression offset : +60 % of ESS_baseline

7. Quick■Reference JSON

```
{ "protocol": "PTL-ATP",
  "ewma": {"window":12,"alpha":0.2},
  "offsets": {"compress_upper":0.08,"compress_lower":0.04,
              "decompress_lower":-0.15,"ess_suppress":0.60},
  "limits": {"sd_min":3000,"sd_max":6200,"ess_max":0.70} }
```