🧪 MU Test Plan — Test 5 (β-Sweep Phase Transition)

Goal

To pinpoint the threshold where the slow path transitions from **microscopic survival** (~10^{-20} range) to **macroscopic survival** (~10^{0} scale). We'll sweep β values between 6 and 9 to see exactly where Truth (T) overtakes the action cost and makes the slow path visible.

Parameters

- **gamma:** 1.0
- **hbar:** 0.1
- **beta (T influence):** 6.0, 7.0, 8.0, 9.0 (sweep)
- **velocities tested:** v = 0.050 (slow), v = 0.500 (fast)
- **selector form:** $T(r) = \frac{1}{1 + |r - r_c|}, \; r_c = 0.25$
- **integration window:** 1.0

Predictions

1. **β=6.0:**
   - Slow weight still suppressed but larger than β=5 (~10^{-18} range).
   - Fast weight remains 0.
2. **β=7.0 → 8.0:**
   - Slow weight should rise dramatically (10^{-12} → 10^{-6} range).
   - Approaching visible survival.
3. **β=9.0:**
   - Slow weight should approach ~10^{-2} → 10^{-1}.
   - Very close to the β=10 case (~0.3).
4. **Phase-transition signature:**
   - Expect a **steep, exponential rise** in slow's weight as β crosses ~8–9.
   - Fast remains annihilated throughout.

Why This Matters

- Locating the **β-threshold** is critical: it's the first **quantitative prediction** of MU.
- This gives us a **phase-like curve** (weight vs β), showing the selector's control and confirming slow's survival is not accidental.
- If the exponential rise happens as predicted, we'll have the first robust **testable law of MU selection**: *Truth amplifies survival beyond a critical threshold.*