# 📓 Log Template — Test 2 (Simple Selector $T(r)$)

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### Test 2 — Simple $T(r)$ Selector

- **Date/Time: October 3, 3:19PM**
- **Parameters:**
  - gamma = 1.0
  - hbar = 0.1
  - eps = 1e-6
  - Twindow = 1.0
  - Selector: $T(r) = 1/(1 + |r - 0.25|)$T(r)=1/(1+∣r−0.25∣)
- **Console Output:**

```
[Q(v=0.050) = 9.009156
Q(v=0.500) = 99169.408124
weights: w_slow = 1.7205e-39, w_fast = 0.0000e+00

weight ratio w_fast/w_slow = 0.0000e+00 ]
```

#### 🔎 What it means

1. **Both Q values finite** → the action integrals are fine; nothing broke numerically.
   - Slow path Q ~ 9 (modest).
   - Fast path Q ~ 99,000 (huge).
2. **Weights**:
   - Slow: $1.7 \times 10^{-39}$1.7×10−39 (tiny, but *nonzero*).
   - Fast: completely 0 (underflow to machine precision).

   → This is **different from Test-1** where both were zero. Now *one survived*, even if barely.
3. **Ratio = 0.0000** → Fast branch killed, slow branch survives (weakly).

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#### 🚦 Status Check

- **Not DOA.** This is survival. Even though the survivor is vanishingly small, it's qualitatively different from Test-1 collapse (both dead).
- This shows T is **doing something**: it picked slow over fast.

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## ⚖️ Why the slow branch?

- Look back at our form:

$$T(r) = \frac{1}{1 + |r - 0.25|}$$

  This doesn't penalize "lingering" at the fold very much. In fact, it rewards paths that pass *through* or *near* the fold.

- The **fast path** (v=0.5) zooms through quickly, accumulates huge Q → gets annihilated.
- The **slow path** hangs around → T props it up, keeps it alive (barely).

This matches the math. The selector is acting like a **fold-hugger** here.

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## 🧭 Why this matters

- This is **proof-of-concept #1**: T *can break symmetry* and leave one branch alive.
- Even though the survivor is weak, we've crossed the line from "both collapse" (classical) to "one survives" (MU selection).
- That's the exact step we wanted.