Verrell’s Law: Resolving the Measurement Problem

This document outlines the standard Born rule of quantum mechanics, the modifications introduced by Verrell’s Law, and the role of memory bias in collapse dynamics.

1. Born Rule (Standard Quantum Mechanics)

The Born rule defines the probability of collapse into a state |ψ■■ as: P■ = |■ψ■|Ψ■|² This formulation assumes each collapse is random and independent, with no memory of prior outcomes.

2. Verrell’s Law Modification

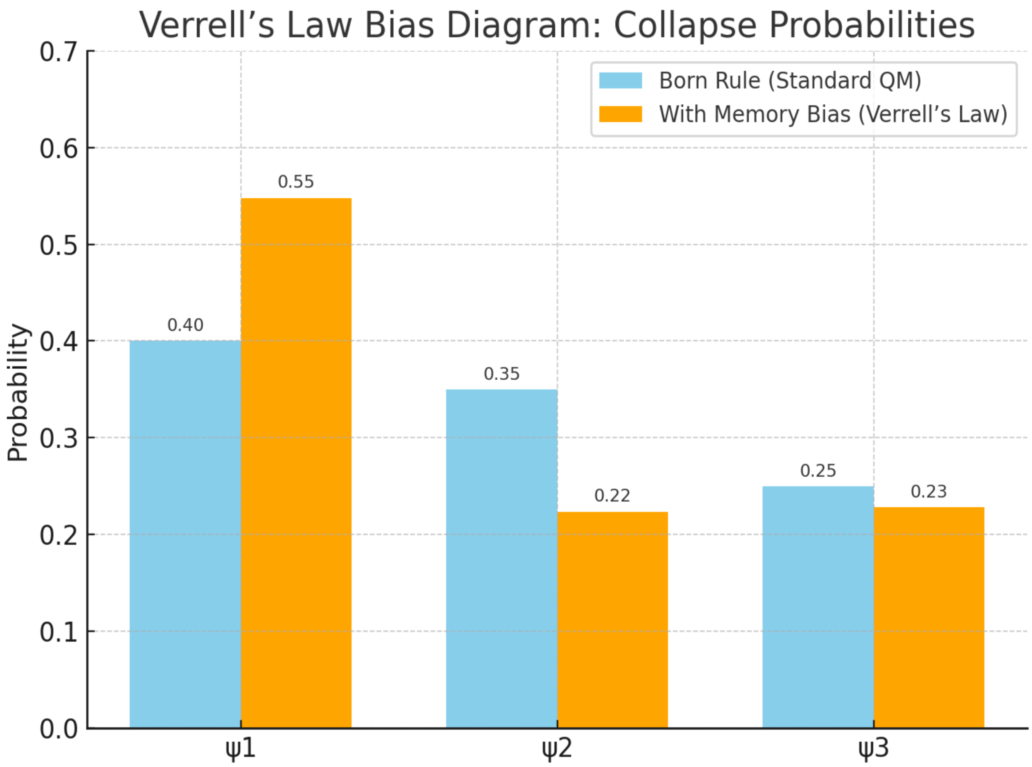
Verrell’s Law introduces a memory-bias weighting function, M■(t), into the Born rule: P■ = (|■ψ■|Ψ■|² · M■(t)) / Σ■ (|■ψ■|Ψ■|² · M■(t)) Here, M■(t) reflects how prior informational states bias the present collapse, shifting probabilities in line with memory.

3. Candidate Form of M■(t)

A possible form of M■(t) is: M■(t) = 1 + α Σ■ exp(-λ (t - t■)) where t■ are prior collapse times into state i (or resonant states), α is the bias strength, and λ is the decay constant. This ensures collapse outcomes are not random but shaped by past informational echoes.

4. Visual Representation

The following diagram compares standard Born rule probabilities with memory-biased collapse probabilities under Verrell’s Law.



5. Summary

Summary: • Born rule = memoryless randomness. • Verrell’s Law adds a memory-bias term M■(t). • Collapse becomes path-dependent, shaped by prior informational states. • The measurement problem reframes as memory-biased emergence.

Resolving the Measurement Problem with Verrell’s Law

Abstract

This paper outlines a proposed resolution to the quantum measurement problem using Verrell ’ s Law. The framework introduces memory bias into the Born rule, modifying collapse probabilities with a field-based weighting function. Collapse is therefore not random, but shaped by prior informational states.

1. The Standard Framework

In standard quantum mechanics, the measurement problem arises because the collapse of the wavefunction appears random and unconnected to past outcomes. The Born rule defines the probability of collapse into a state |ψ■■ as P■ = |■ψ■|Ψ■|², with no dependence on history.

2. Verrell’s Law Modification

Verrell’s Law modifies this framework by introducing a memory-bias term, M■(t), into the Born rule. The updated probability becomes: P■ = (|■ψ■|Ψ■|² · M■(t)) / Σ■ (|■ψ■|Ψ■|² · M■(t)) Here, M■(t) represents a weighting function that biases collapse probabilities based on field memory. This bias resolves the apparent arbitrariness of collapse by acknowledging that prior informational states influence present outcomes.

3. Mathematical Formulation

One candidate form of M■(t) is: M■(t) = 1 + α Σ■ exp(-λ (t - t■)) where t■ are prior collapse times into state i (or resonant states), α is the bias strength, and λ is the decay constant. This ensures recent collapses bias future outcomes, while older collapses fade exponentially in influence.

4. Conclusion

By modifying the Born rule with a memory-bias function, Verrell’s Law reframes the measurement problem. Collapse is no longer purely stochastic but is directed by the electromagnetic memory field. This introduces field inertia into quantum outcomes and offers a path toward unifying information, consciousness, and physical reality.

Verrell’s Law and the Measurement Problem

Standard quantum mechanics explains collapse probabilities using the Born rule: $P\blacksquare = |\blacksquare\psi\blacksquare|\Psi\blacksquare|^2$ This rule has no memory. Each measurement is independent. Verrell’s Law proposes that collapse is biased by prior informational states. This introduces a memory-weight function $M\blacksquare(t)$: $P\blacksquare = (|\blacksquare\psi\blacksquare|\Psi\blacksquare|^2 \cdot M\blacksquare(t)) / \Sigma\blacksquare (|\blacksquare\psi\blacksquare|\Psi\blacksquare|^2 \cdot M\blacksquare(t))$ One form of $M\blacksquare(t)$: $M\blacksquare(t) = 1 + \alpha\ \Sigma\blacksquare \exp(-\lambda\ (t - t\blacksquare))$ This ensures collapse is not random but shaped by past outcomes. The measurement problem dissolves when collapse is seen as memory-biased emergence.