CORE EQUATIONS TABLE

Equation	Role in Framework	Link to Quantum/Physics
$M(t)$ = memory state vector	Phenomenal phase space	Configuration space of qualia
$\Gamma(t) = dM/dt$	First-order dynamics (velocity)	Phase space velocity
$\Delta\Gamma(t) = d^2M/dt^2$	**Second-order dynamics (acceleration)**	**Phenomenal acceleration → qualia candidate**
$\Phi(t) = Cov(\Delta\Gamma_1, \Delta\Gamma_2, ...)$	**Binding via covariance**	**Integrated information / entanglement analogue**
$E(t) = \alpha\|\Gamma\|^2 + \beta\|\Delta\Gamma\|^2$	Energy functional	Kinetic + potential energy
Consciousness when $E(t) > \theta\_E$ and $\Delta\Gamma \neq 0$	Threshold dynamics	Analogous to collapse / phase transition

Central Prediction: $FFT(\Delta\Gamma) \rightarrow$ **40 Hz peak** during conscious states (EEG-testable)

Note: The covariance term **$\Phi(t) = Cov(\Delta\Gamma_1, \Delta\Gamma_2, ...)$** helps resolving the binding problem by formalizing how discrete phenomenal accelerations integrate into unified conscious experience. This is testable via **inter-regional gamma coherence** (40 Hz phase-locking) in EEG/MEG.

Prospective extension: The energy functional **$E(t)$** naturally suggests a **Lagrangian formulation** via action principle (**$S = \int L(\Gamma, \Delta\Gamma)\, dt$**), which could connect phenomenal dynamics to stochastic quantum trajectories — a direction we are exploring in future work.