Pillar 2 Update
Update 2.1: Core Dynamical Equations and Fermionic Aspects in the Lava-Void Quantum Framework

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This update extends Pillar 2 by deriving explicit dynamical wave equations from viscous relativistic fluid dynamics and establishing the origin of spin and fermionic statistics. Particles arise as coherent vortices; entanglement, superposition, and braiding follow from turbulent topology.

2.1.1 Derivation of Wave Equations from Viscous Navier-Stokes

Continuity and momentum equations govern the turbulent vacuum:

partial_t rho + div(rho v) = 0

rho (partial_t v + (v dot grad) v) = minus grad p plus div tau plus rho f

Applying a viscous Madelung transformation yields a quantum Hamilton-Jacobi equation with an emergent quantum potential.

partial_t S + (grad S)^2 / (2 m) plus V plus Q_visc = 0

Q_visc = minus (hbar_eff^2 / 2 m) (laplacian sqrt(rho) / sqrt(rho)) plus (eta / rho) |grad v|^2

Summary. The Schrodinger equation emerges from irrotational vortex motion with viscous and turbulent corrections.

2.1.2 Spin and Fermionic Statistics from Vortex Topology

Spin arises from vortex handedness and braiding topology. The accumulated geometric phase is:

phi_braid = 2 pi theta, theta = 1/2 for fermions

Pauli exclusion follows from enstrophy increase under vortex overlap.

Summary. Fermionic antisymmetry arises naturally from vortex topology and braiding.

2.1.3 Synthesis and Closure for Update 2.1

This update secures the dynamical and statistical core of emergent quantum mechanics within the Lava-Void framework.

Closing Statement. Pillar 2 is strengthened and remains consistent with all prior turbulence-based verifications.