Applicant Response to Pre-Exam Formalities Notice

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Title: Hybrid Computational Framework for Quantum and Resonance Simulation

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In response to the Notice to File Missing Parts under 37 CFR 1.53(b), Applicant hereby submits the following claims in compliance with 35 U.S.C. 112 and pays the required $34 micro-entity surcharge.

Applicant also corrects Claim 3 to reflect the actual implemented embodiment of the invention, replacing references to "tetrahedral or higher-dimensional simplices" with the geometric coordinate and manifold mapping system as implemented in the QuantoniumOS codebase. This amendment does not broaden the scope of the claim but accurately describes the actual working embodiment.

What is claimed is:

1. Symbolic Resonance Fourier Transform Engine

A symbolic transformation engine for quantum amplitude decomposition, comprising a symbolic representation module configured to express quantum state amplitudes as algebraic forms, a phase-space coherence retention mechanism for maintaining structural dependencies between symbolic amplitudes and phase interactions, a topological embedding layer that maps symbolic amplitudes into structured manifolds preserving winding numbers, node linkage, and transformation invariants, and a symbolic gate propagation subsystem adapted to support quantum logic operations including Hadamard and Pauli-X gates without collapsing symbolic entanglement structures.

2. Resonance-Based Cryptographic Subsystem

A cryptographic system comprising a symbolic waveform generation unit configured to construct amplitude-phase modulated signatures, a topological hashing module for extracting waveform features into Bloom-like filters representing cryptographic identities, a dynamic entropy mapping engine for continuous modulation of key material based on symbolic resonance states, and a recursive modulation controller adapted to modify waveform structure

in real time, wherein the system is resistant to classical and quantum decryption algorithms due to its operation in a symbolic phase-space.

3. Geometric Structures for RFT-Based Cryptographic Waveform Hashing

A data storage and cryptographic architecture comprising Resonance Fourier Transform (RFT)-based geometric feature extraction applied to waveform data, wherein geometric coordinate transformations map waveform features through manifold mappings to generate topological invariants for cryptographic waveform hashing, the geometric structures including:

– polar-to-Cartesian coordinate systems with golden ratio scaling applied to harmonic relationships,

– complex geometric coordinate generation via exponential transforms,

– topological winding number computation and Euler characteristic approximation for cryptographic signatures, and

– manifold-based hash generation that preserves geometric relationships in the cryptographic output space;

wherein said architecture integrates symbolic amplitude values with phase-path relationship encoding and resonance envelope representation for secure symbolic data storage, retrieval, and encryption.

4. Hybrid Mode Integration

A unified computational framework comprising the symbolic transformation engine of claim 1, the cryptographic subsystem of claim 2, and the geometric structures of claim 3, wherein symbolic amplitude and phase-state transformations propagate coherently across encryption and storage layers, dynamic resource allocation and topological integrity are maintained through synchronized orchestration, and the system operates as a modular, phase-aware architecture suitable for symbolic simulation, secure communication, and nonbinary data management.