## Mathematical Theory on Quantum Circuits and Vectorial Dynamics

This theory explores how quantum algorithms and circuits interact with vectorial dynamics and fundamental equations, particularly in aviation contexts or multidimensional geometries.

### Vector Basis and Quantum Logarithmic Structures

The main idea is that the algorithm with a logarithmic origin or quantum-based T-deph structures for QLSS output resides in a space (3)' or (e)', which could act as a mirror of a vector under another gravity. This gravity generates objects such as ultrasonic waves (1) or dispersed holograms.

**T-deph(3):**
12 · Qlogbase 2(1/Ear)+2(Q+d)+Dcbe+4(Q+d)T(DSP)+Q(24l+31)+3dlogbase 2(1/ez)+d(32l−2)12 \cdot \text{Qlog}_{\text{base 2}}(1/\text{Ear}) + 2(Q + d) + \text{Dcbe} + 4(Q + d)T(DSP) + Q(24l + 31) + 3d \log_{\text{base 2}}(1/\text{ez}) + d(32l - 2)12 · Qlogbase 2(1/Ear)+2(Q+d)+Dcbe+4(Q+d)T(DSP)+Q(24l+31)+3dlogbase 2(1/ez)+d(32l−2)

- **Plane AB:** Represents the circuit or scheme of a quantum Hamiltonian U with sub G components connected via three wires.
- **Immersive Quantum Gravity Tree:** Describes a suspended circuit in a multidimensional space: (3)′inverse vector(3)″(3)′′′′(Δ)′′′′′′(3)' \text{inverse vector} \quad (3)" \quad (3)"" \quad (\Delta)"""(3)′inverse vector(3)″(3)′′′′(Δ)′′′′′′

### Points and Vectors in Space

- Point A: (3,1)(3,1)(3,1)
- Point B: (5,4)(5,4)(5,4)
  B−A=(5−3,4−1)=(2,3)B - A = (5-3, 4-1) = (2,3)B−A=(5−3,4−1)=(2,3)

The analysis focuses on quantum algorithms like QLSS improvement for inverse reflections of vectors defined by objects in an **E-space** suspended in a 4-dimensional tetrahedron.

### Free Vectors and Position Analysis

The coordinates of a point P(x,y)P(x, y)P(x,y) relative to a reference R={0:i,j}R = \{0: i, j\}R={0:i,j} are the position vector OP=xi+yjOP = xi + yjOP=xi+yj.
For each coordinate in a free vector, geometric planes emerge within a 3D or 4D tetrahedron where rotation across dimensions creates observable planes or trajectories.

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**Applications and Advanced Considerations**

1. **Quantum Resource Table**:
   Designed to produce QLSS outputs using logarithmic quantum bases in circuit performance optimization.
2. **Supersonic Plane Dynamics**:
   The velocity of a plane may exist in another dimension, decoupled from classical 3D space.
   - Rotations within a 4D tetrahedron allow new insights into dispersed holograms or ultrasonic velocities.
3. **Aviation Geometry**:
   Each plane or coordinate in a multidimensional rotation suggests velocity-separated behaviors, potentially applicable to advanced navigation systems.

## 1. Quantum Logarithms in Vector Systems

In a quantum context, logarithms are not just mathematical tools; they play key roles in:

- **Quantum information measurement**: Assessing the probability of a system being in a specific state.
- **Optimization in quantum circuits**: Simplifying complex calculations, such as transitions between quantum states in different bases.
- **Quantum amplitude analysis**: Connecting probabilities to distances in a vector space.

For example, in the equation:

Tdeph=12 ⋅ logbase 2(1/Ear)+2(Q+d)+3dlogbase 2(1/ez),T_{\text{deph}} = 12 \cdot \log_{\text{base } 2}(1/\text{Ear}) + 2(Q + d) + 3d \log_{\text{base } 2}(1/\text{ez}),Tdeph=12 ⋅ logbase 2(1/Ear)+2(Q+d)+3dlogbase 2(1/ez),

the term logbase 2(1/Ear)\log_{\text{base } 2}(1/\text{Ear})logbase 2(1/Ear) can be interpreted as:

- A measure of "local quantum entropy," describing how information is distributed within a given system.
- A representation of the "depth" of the quantum system, i.e., how far it is from a base state.

This logarithmic relationship is essential for understanding how quantum states transform or interact with vectorial systems.

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## 2. Relationship Between Vector Positions and Quantum Amplitudes

In quantum mechanics, vectors often represent states in a Hilbert space. When combined with classical vectors, they provide a hybrid model to analyze multidimensional phenomena.

**Key Interactions:**

1. **Position vectors** (v⃗=(x,y,z)\vec{v} = (x, y, z)v=(x,y,z)):
   - Represent spatial dimensions where classical dynamics occur.
   - In a quantum system, these vectors might also encode probabilities or amplitudes for locating particles.
2. **Quantum amplitudes**:
   Amplitudes relate to the probability of finding a system in a specific state. For instance, if a quantum system interacts with a 3D space:
   ψ(v⃗)=A⋅exp(−iθ),\psi(\vec{v}) = A \cdot \exp(-i\theta),ψ(v)=A⋅exp(−iθ),
   where A=logbase 2(1/d)A = \log_{\text{base } 2}(1/d)A=logbase 2(1/d), the logarithmic term adjusts the probability distribution over spatial dimensions.

**Example:**

Consider two points A(3,1)A(3,1)A(3,1) and B(5,4)B(5,4)B(5,4):
The vector AB⃗=(5−3,4−1)=(2,3)\vec{AB} = (5-3, 4-1) = (2,3)AB=(5−3,4−1)=(2,3) can be associated with a quantum system whose state changes logarithmically as:

ψAB=logbase 2(∣∣AB⃗∣∣)+i⋅f(t),\psi_{AB} = \log_{\text{base } 2}(\|\vec{AB}\|) + i \cdot f(t),ψAB=logbase 2(∣∣AB∣∣)+i⋅f(t),

where ∣∣AB⃗∣∣=22+32\|\vec{AB}\| = \sqrt{2^2 + 3^2}∣∣AB∣∣=22+32.
This provides insights into both the classical distance and quantum phase shift during transitions.

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## 3. Logarithmic Spaces and Multidimensional Dynamics

Logarithms are particularly useful in higher-dimensional vector systems:

- **4D Tetrahedral Systems**: Rotating in four dimensions allows analysis of trajectories in spaces inaccessible in classical 3D physics.
- **Quantum states in E-spaces**: Combining logarithmic functions with multidimensional vectors enables visualization of quantum particles interacting in these spaces.

For instance, if a supersonic plane operates in an extended dimension, the velocity vector might include a logarithmic factor accounting for dimensional coupling:

v⃗plane=logbase 2(1/Ez)⋅(x,y,z,w),\vec{v}_{\text{plane}} = \log_{\text{base } 2}(1/\text{Ez}) \cdot (x, y, z, w),vplane=logbase 2(1/Ez)⋅(x,y,z,w),

where www is the additional dimension's contribution.

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## 4. Applications of Quantum-Logarithmic Analysis in Vectors

- **Quantum optimization in navigation**: Using logarithmic quantum amplitudes to model efficient flight paths or trajectories in multidimensional spaces.
- **Sensor design**: Developing advanced navigation systems that account for quantum interference and dimensional overlaps.
- **Hybrid quantum-classical modeling**: Bridging quantum mechanics and classical vector algebra for real-world applications in aerodynamics, robotics, or aerospace engineering.