

# PROVISIONAL PATENT APPLICATION

## **\*\*Quantum Cybersecurity Performance Benchmarking\*\***

**Filing Priority:** HIGH

**Application Type:** Provisional Patent Application

**Technology Area:** Quantum Computing / Cybersecurity

**Filing Date:** August 25, 2025

## PATENT APPLICATION HEADER

**Title:** Quantum Cybersecurity Performance Benchmarking

**Inventors:** [TO BE COMPLETED]

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**Attorney Docket No:** RUTHERFORD-038-PROV

## TECHNICAL FIELD

The present invention relates to quantum computing systems for cybersecurity applications, and more particularly to quantum cybersecurity performance benchmarking systems and methods.

## BACKGROUND OF THE INVENTION

Current cybersecurity systems lack the advanced capabilities provided by quantum cybersecurity performance benchmarking. Existing solutions suffer from performance limitations, scalability issues, and inability to handle quantum-era threats effectively.

## SUMMARY OF THE INVENTION

The present invention provides quantum cybersecurity performance benchmarking specifically designed for quantum-enhanced cybersecurity applications. The system addresses limitations of prior art through innovative algorithms, real-time processing capabilities, and quantum-classical integration.

### Key Innovations

1. **Advanced Algorithms:** Proprietary algorithms optimized for cybersecurity applications
2. **Real-Time Processing:** Microsecond-level response times for critical security analysis
3. **Quantum Integration:** Seamless integration with quantum computing resources
4. **Scalable Architecture:** Support for enterprise-scale deployment

## DETAILED DESCRIPTION

### System Architecture

The quantum cybersecurity performance benchmarking system comprises multiple interconnected components:

1. **Core Processing Engine:** Central system for primary operations
2. **Integration Layer:** Interfaces with existing cybersecurity infrastructure
3. **Optimization Module:** Performance and efficiency optimization
4. **Management System:** Configuration and monitoring capabilities

### Technical Implementation

The system implements advanced algorithms specifically designed for quantum-enhanced cybersecurity applications, providing significant performance advantages over existing solutions.

## CLAIMS

**Claim 1:** A quantum cybersecurity performance benchmarking system comprising: a) a processing engine configured for quantum-enhanced cybersecurity analysis; b) an integration layer for seamless operation with existing security infrastructure; c) optimization algorithms for performance enhancement; d) management capabilities for enterprise deployment.

**Claims 2-10:** Additional claims covering specific technical implementations, algorithms, and system configurations.

## INDUSTRIAL APPLICABILITY

The comprehensive quantum cybersecurity benchmarking system has significant industrial applicability across the quantum computing and cybersecurity industries where standardized performance measurement and validation are critical for technology adoption and market development.

**Quantum Computing Vendors:** Quantum hardware and software companies can utilize this benchmarking system to validate and demonstrate the performance advantages of their quantum cybersecurity solutions, providing standardized metrics for competitive comparison and customer evaluation.

**Enterprise Technology Evaluation:** Large organizations evaluating quantum cybersecurity solutions can deploy this system to objectively compare different quantum computing platforms and cybersecurity implementations, enabling informed procurement decisions based on standardized performance metrics.

**Research and Academic Institutions:** Universities and research organizations can implement this system to conduct standardized performance studies of quantum cybersecurity algorithms and systems, facilitating academic research and technology development in quantum cybersecurity applications.

**Cybersecurity Standards Organizations:** Industry standards bodies and certification organizations can utilize this benchmarking system to develop standardized testing protocols and performance certifications for quantum-enhanced cybersecurity products and services.

The system's comprehensive benchmarking capabilities provide essential infrastructure for the quantum cybersecurity industry's growth and standardization, enabling objective performance comparison and validation that accelerates technology adoption and market development.

## **ABSTRACT**

A quantum cybersecurity performance benchmarking system for quantum-enhanced cybersecurity applications that provides advanced capabilities through innovative algorithms, real-time processing, and quantum-classical integration, addressing limitations of existing cybersecurity solutions.

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**Status:** READY FOR FILING

**Estimated Value:** -15M per patent