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(57) Abstract :

MULTI-LAYER QUANTUM-RESISTANT CRYPTOGRAPHIC KEY DISTRIBUTION SYSTEM UTILIZING POST-QUANTUM ALGORITHMIC OPTIMIZATIONS ABSTRACT The present invention relates to a multi-layer quantum-resistant cryptographic key distribution system (100), designed to enhance security against quantum computational attacks. The system (100) features a layered architecture (102), where each layer is responsible for a specific security function, including a quantum-resistant algorithm layer that utilizes post-quantum cryptographic techniques to generate, distribute, and manage cryptographic keys. The system also comprises a communication layer (104) that securely transmits keys, incorporating real-time eavesdropping detection, and a redundancy layer (106) designed to regenerate and reissue keys in response to security breaches. A post-quantum algorithmic optimization module (108) dynamically adjusts parameters to balance security and computational efficiency. The system further includes a key management unit (110) for coordinating key generation and distribution, and a monitoring and control interface (112) that provides real-time system visibility and allows for both manual and automated security adjustments.

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