

**Quantum key-based secure and authenticated message transmission in wireless networks using quantum pareto optimal routing**

# A Major Project Abstract

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# ABSTRACT

Securing communication networks is a big problem in the modern world because information needs to be sent from one place to another without being hacked. The system's secrecy relies on the shared key algorithm and public key. Quantum cryptography is a technique that provides a more secure communication network based on photon polarisation and the principle of uncertainty. In order to guarantee secure communication, diverse encryption techniques are employed to withstand different forms of attack. As a means of improving message authentication, a novel approach has been suggested that incorporates the Blowfish algorithm as the encryption function alongside a new quantum hash function as the authentication function. Wireless multi-hop networks (WMHNs) are used for secure communication. These networks require a trade-off between different Quality of service requirements (QOS). By means of the Pareto optimality criterion, the resulting solutions are incorporated into the Pareto frontier .Nevertheless, locating all the pareto-optimum paths in WMHNs can be difficult, and the suggested approach entails utilising a dynamic optimization i.e. Evolutionary Quantum Pareto Optimization (EQPO) algorithm.

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