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(57) Abstract :
The present invention discloses a quantum encryption-based secure communication system for IT networks, comprising a quantum transmitter module (101), a quantum receiver module (102), a key management unit (103), a classical communication interface (104), and a network integration module (105). The system enables secure quantum key distribution, intrusion detection, and seamless integration with existing infrastructure. Using polarization-encoded photons, it offers computationally unbreakable encryption and real-time intrusion resilience, making it suitable for high-security applications in enterprise and defense communication networks.

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