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(57) Abstract :

The invention relates to a device for quantum signal processing in communication networks comprising a quantum transceiver (101), an entanglement generator (102), a quantum error correction unit (103), an adaptive bandwidth controller (104), a classical-quantum interface (105), and a processing core (106). The device integrates quantum and classical systems to ensure ultra-secure, error-resilient, and high-speed communication. By employing entanglement-assisted encryption, real-time quantum error correction, and adaptive bandwidth allocation, the invention enhances efficiency and scalability, making it suitable for future communication standards including 6G, satellite networks, and smart infrastructures.

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