

# Creation of secure society with quantum info-communication networks

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The realization of long-distance quantum information network, which relies on the fundamental principle of quantum mechanics, is desired for the absolutely secure info-communication. Especially, the development of a quantum repeater, which prolong the quantum access, is technically challenging. We investigate the fundamental physics of quantum media converters as a core technique for building quantum repeater networks. Especially, we develop the conversion technique of quantum media such as photons, electron spins, nuclear spins, super-conducting qubits for the role of long-distance transmission, quantum gate, quantum memory, quantum circuit, respectively. With these, we research and develop towards the construction of hybrid quantum communication systems.

