

Motivation

Entanglement swapping, which is "quantum teleportation" of a particle from an entangled pair state, will be realized over optical fiber networks.

Originality

We have achieved an entanglement swapping in the 1.5 μm telecom band with a swapping rate that is about 20-times larger than that of the previous report.

Impact

By combining this technology with a "quantum memory" for storing quantum states of photons, we can realize scalable quantum communication based on quantum repeaters.

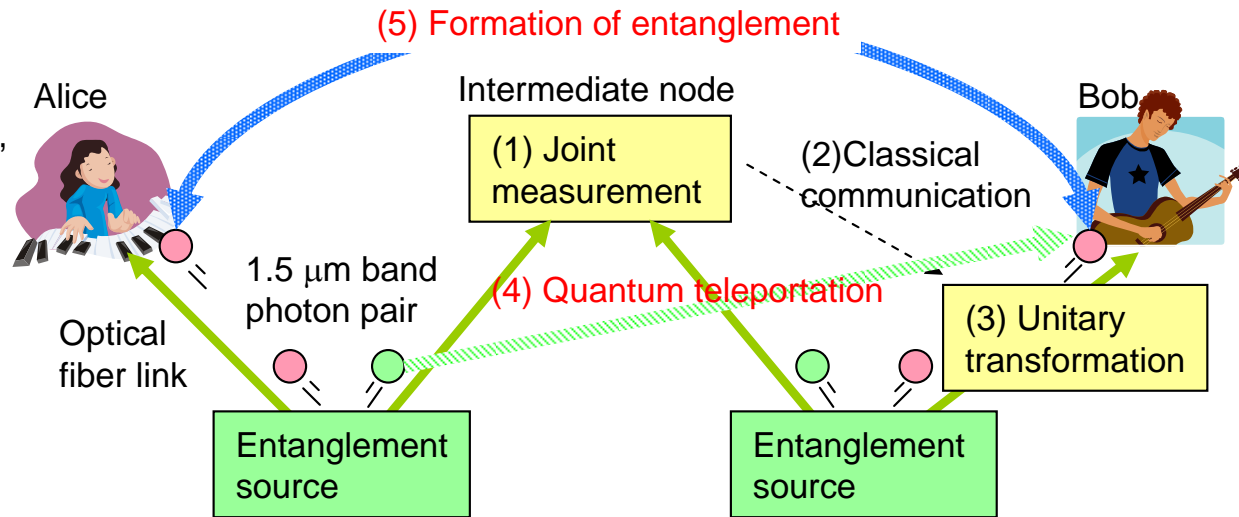


Fig. 1: Principle of entanglement swapping

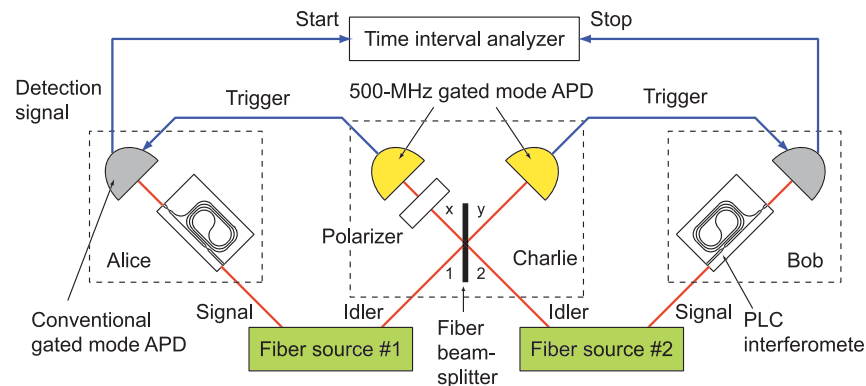


Fig. 2: Experimental setup

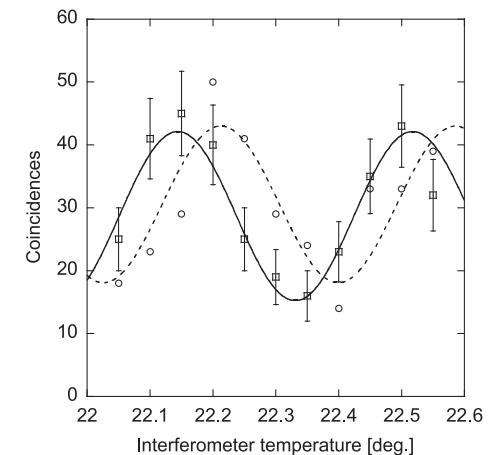


Fig. 3: Two-photon interference fringes obtained with Alice's and Bob's photons

