

Abstract Submitted
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Quantum telecommunication based on atomic cascade transitions

SHAU-YU LAN, THIERRY CHANELIERE, DZMITRY MATSUKEVICH, STEWART JENKINS, MICHAEL CHAPMAN, BRIAN KENNEDY, ALEX KUZMICH, Georgia Institute of Technology — We report generation of an entangled pair of 1530 nm and 780 nm photons via atomic cascade emission in a cold ensemble of rubidium atoms. The former photon is ideal for long-distance quantum communication, and the latter is naturally suited for mapping to a long-lived atomic memory. Together with our demonstration of photonic-to-atomic qubit conversion, the essential elements for a telecommunication quantum repeater have been realized.

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