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Entanglement State Transfer Between the Random Access Quantum Memories CHANG LI, CHANG WEI, NAN JIANG, SHENG ZHANG, YUNFEI PU, LUMING DUAN, CQI, Tsinghua University — The quantum network requires the high capability of interfaces and channels. The random access quantum memory (RAQM) is one promising candidate, of which the individual micro memory cells can be entangled and store the quantum state under programmable control. Here, we demonstrate a protocol to transfer the entanglement state between the two types of random access quantum memory, which are based on the DLCZ protocol and EIT effect individually with the help of acousto-optic deflectors (AODs). The measured state fidelity indicates the entanglement is preserved during the process. The experiment results confirm that the quantum links between RAQMs is intrinsically high dimensional quantum channel, which makes a significant step towards quantum information process and quantum network.

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