

Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

Quantum repeaters with optimized memory storage time

VLADIMIR MALINOVSKY, SIDDHARTHA SANTRA, US Army Rsch Lab - Adelphi, LIANG JIANG, Department of Applied Physics, Yale University, New Haven, CT 06511 — We propose an optimized access time protocol (OAP) and quantum repeater architecture that maximizes the entanglement generation rate. Access time is defined as the total time the quantum memories store the quantum state before they are either used for entanglement length doubling or discarded due to their poor entanglement quality. The OAP uses hierarchically optimized access times for all nesting levels. The optimal access time depends on the parameters of quantum memory quality, the entanglement generation probability, and the swapping success probability. By restricting the access time, the OAP provides an average remote entangled state with a high measure of entanglement since the time for memory decoherence is limited.

Vladimir Malinovsky
US Army Rsch Lab - Adelphi

Date submitted: 01 Feb 2019

Electronic form version 1.4