

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Investigation of physical implementation of one-way quantum repeaters with multilevel systems SRERAMAN MURALIDHARAN, CHANGLING ZOU, LINSHU LI, JIANMING WEN, LIANG JIANG, Yale University — Error correcting codes of multilevel systems have been shown to be resource efficient for the correction of erasure errors. One way quantum repeaters based on multilevel systems offer ultrafast key generation rates, while consuming lower resources than qubit based schemes (arxiv:1504.08054). On the other hand, they are technologically demanding. Here, we identify the key technological requirements needed for the implementation of quantum repeaters with multilevel systems and propose different experimental techniques that can be used to overcome the difficulties. We propose a generalized Duan-Kimble scheme for the generation of error correcting codes of multilevel systems with time-bin qudits.

Sreraman Muralidharan
Yale University

Date submitted: 06 Nov 2015

Electronic form version 1.4