Abstract Submitted
for the DAMOP17 Meeting of
The American Physical Society

Towards a Quantum Memory assisted MDI-QKD node[1] MEHDI
NAMAZI, Stony Brook University, GIUSEPPE VALLONE, University of Padova,
BERTUS JORDAAN, CONNOR GOHAM, REIHANEH SHAHROKHSHAHI,
Stony Brook University, PAOLO VILLORESI, University of Padova, EDEN
FIGUEROA, Stony Brook University — The creation of large quantum network
that permits the communication of quantum states and the secure distribution of
cryptographic keys requires multiple operational quantum memories. In this work
we present our progress towards building a prototypical quantum network that per-
forms the memory-assisted measurement device independent QKD protocol [1,2].
Currently our network combines the quantum part of the BB84 protocol with room-
temperature quantum memory operation, while still maintaining relevant quantum
bit error rates for single-photon level operation [3]. We will also discuss our efforts
to use a network of two room temperature quantum memories, receiving, storing
and transforming randomly polarized photons in order to realize Bell state measure-
ments. [1] New Journal of Physics 16, 043005 (2014) [2] Phys. Rev. A 89, 012301
(2014) [3] arXiv:1609.08676

Mehdi Namazi
Stony Brook University

Date submitted: 29 Jan 2017

Electronic form version 1.4