

Satellite Quantum Communication Via The Alphasat Laser

[DOC] Satellite Quantum Communication Via The Alphasat Laser

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Satellite Quantum Communication via the Alphasat Laser ...

Satellite Quantum Communication via the Alphasat Laser Communication Terminal Quantum signals from 36 thousand kilometers above Earth Dominique Elser, Kevin Günthner, Imran Khan, Birgit Stiller, Christoph Marquardt, Gerd Leuchs Quantum Information Processing Group (QIV) Max Planck Institute for the Science of Light (MPL) Erlangen, Germany

Quantum Communications via Satellite with Photon Subtraction

in regard to actual deployments of quantum communications via satellites [5]-[9] These latter works on satellite-based quantum communications are largely based on the deployment of discrete-variable (DV) quantum information protocols, a technology that is dependent on the production of single-photon states

Towards quantum communication from global navigation ...

Towards quantum communication from global navigation satellite system Luca Calderaro,¹ Costantino Agnesi,¹ Daniele Dequal,² Francesco Vedovato,¹ Matteo Schiavon,¹ Alberto Santamato,¹ Vincenza Luceri,³ Giuseppe Bianco,² Giuseppe Vallone,¹ and Paolo Villoresi¹ ¹Dipartimento di Ingegneria dell'Informazione, Universit a di Padova, via Gradenigo 6B, 35131 Padova, Italy

Experimental Satellite Quantum Communications

Quantum communication (QC), namely, the faithful transmission of generic quantum states, is a key ingredient of quantum information science Here we demonstrate QC with polarization encoding from space to ground by exploiting satellite corner cube retroreflectors as quantum transmitters in orbit and the

Quantum Communication, Sensing and Measurement in Space

2 Classical communication to, from, and in space at ultimate quantum- mechanical limits 3 Quantum communication to, from, and in space 4 Quantum enhancements to remote-sensing and in situ instruments in space Eight subtopic areas emerged from the workshop as warranting further

DEVICES FOR QUANTUM COMMUNICATION ENTANGLED ...

is essential The communication via elemental particles might be the solution Experts from the Fraunhofer IOF have developed an entangled photon pair source for safe quantum communication, based on a satellite network By using pairs of polarisation entangled photons a physically tamper-proof communication can be achieved

Quantum-limited Measurements of Signals from a Satellite ...

Title: Quantum-limited Measurements of Signals from a Satellite in Geostationary Earth Orbit Author: Dominique Elser, Kevin Günthner, Imran Khan, Birgit Stiller, Ömer Bayraktar, Christian R Müller, Karen Saucke, Daniel Tröndle, Frank Heine, Stefan Seel, Peter Greulich, Herwig Zech, Björn Gütlich, Ines Richter, Rolf Meyer, Christoph Marquardt, and Gerd Leuchs

Quantum Communications at NASA Glenn Research Center

Quantum Communications at NASA Glenn Research Center Dr Jeffrey Wilson, Dr John Lekki, Roger Tokars, Develop computational models of QI and alternative quantum communication protocols (3) Compare the advantages and disadvantages of QI with other quantum Enhanced Sensitivity of Photodetection via Quantum Illumination, Science 321 , 12

Quantum Technologies in Space

The breath of applications of quantum technologies is ample and covers the tantalizing possibility to address space science and technology The recent launch of a Chinese satellite with the scope of demonstrating the viability of primitives for quantum communication through satellite-to-ground channels is perceived as a technical stepping-stone

Feasibility of satellite quantum key distribution

and improving free-space quantum key distribution in the turbulent atmosphere C Erven, B Heim, E Meyer-Scott et al-A comprehensive design and performance analysis of low Earth orbit satellite quantum communication J-P Bourgoin, E Meyer-Scott, B L Higgins et al-Recent citations Reference-frame-independent quantum key distribution with an

Study proves viability of quantum satellite communications

Study proves viability of quantum satellite communications 6 June 2017 Researchers in Canada have taken a significant step towards enabling secure quantum communication via moving satellites, as

Architecting of a Secure Quantum Communications Satellite

Craft Prospect is developing a Secure Quantum Communications Nano-satellite to provide a Quantum Key Distribution (QKD) facility to security service providers To ensure keys can be delivered via an optical channel, deep learning algorithms will be used for cloud detection

Long-distance quantum communication with entangled ...

Fig 1 Scenarios for satellite-aided quantum communication with an Earth-based transmitter terminal The transmitter terminal distributes entangled photon pairs to the receivers which can perform an entanglement-based quantum communication protocol As indicated, a relay module redirects and/or manipulates qubit states without actually

Quantum Communications

quantum communication; and in 2015, their success in quantum teleportation of multiple degrees of freedom of a single photon (Nature 518,

516–519, 2015: doi:101038/nature14246), which laid a solid foundation for expandable quantum network technologies, was evaluated by the Institute of Physics of UK as a “Breakthrough of the Year”

Overview of the Status of Quantum Science and Technology ...

Quantum key distribution (QKD) and quantum communication via “teleportation” using quantum repeaters have been very active areas of research and development, starting with the landmark work by Bennett and Brassard (BB84) and the experimental demonstration of atom teleportation by Blatt in 2004 This direction has become quite

Real-world intercontinental quantum communications enabled ...

quantum communication distance has been limited (1140), and ground-to-satellite quantum teleportation (Ren et al 2017, Nature 549, 70) quantum network in Beijing via optical fibers Very

PhD Scholarship University of New South Wales (UNSW ...

QKD from Space-Based Quantum Communications Quantum communication via low-orbit satellites offers up a paradigm shift in telecommunications Providing for unparalleled communication security, this emerging technology will also lead us into the development of the global quantum internet This research area was given a largeboost recently with

Quantum Leap: From Tests of Quantum Foundations to New ...

Ground Tests for Satellite Quantum Communication Free-Space Quantum Teleportation and entanglement distribution (~100km) Loss for an uplink of ground to satellite: 45dB Channel loss: 35-53dB Phase 2: Test the feasibility of quantum communication via high-loss satellite-to-ground channel V S Yin et al, Nature 488, 185 (2012) Loss for two-downlink

Deterministic quantum teleportation through fiber channels

cently, by means of a low-Earth orbit satellite, ground-to-satellite quantumteleportationwithasingl ephotonover1400kmwasachieved, which provided a feasible protocol to realize quantum communication at a global scale (23) Although great progress has been made for de-monstrating quantum teleportation of photonic qubits, a probabilistic

Qube - A CubeSat for Quantum Key Distribution Experiments

In a world of global satellite communication networks, it is crucial to ensure the security of these data links QUBE is a project that will develop and launch a CubeSat for the downlink of strongly attenuated light pulses, with encoded quantum information, which can be used for the exchange of encryption keys