

FREE-SPACE QUANTUM COMMUNICATIONS WORKSHOP

LISBON - PORTUGAL



Free-Space Quantum Communications Workshop: Talks and Poster Session

From September 09 to 10, the Instituto Superior Técnico - IST hosted the "Free-space Quantum Communication" workshop. The event was developed within the scope of the PTQCI Portuguese Quantum Communications Infrastructure project and brought together national and international key players in the field of quantum technologies to discuss the topic of free-space quantum communication, an important topic for airborne and space-based quantum communication.

The initiative was organized by Emmanuel Zambrini Cruzeiro, from Instituto de Telecomunicações - Lisboa and Instituto Superior Técnico.

ABOUT THE PROJECT

The Portuguese Quantum Communication Infrastructure (PTQCI) project is the first land segment of the European Quantum Communication Infrastructure (EuroQCI) in Portugal and is the first step towards the integration in the European infrastructure.

PTQCI should enable the deployment of highlysecure services based on Quan-

In this issue:

Free-space Quantum Communications Workshop in Lisbon; PTQCI Summer School: Quantum Communication & Space in Lisbon; PTQCI presentation at the IrelandQCI Workshop, PTQCI Presentation at HellasQCI Workshop in Greece, PTQCI MOOCs and E-book, and Papers in Conference.

The Workshop included 15 technical sessions led by experts from academia and industry, as well as a poster session and live demonstrations. The speakers were: Alessandro Zavata (QTI); Margarida Vieira (Deimos); Davide Rusca (VQCC - University of Vigo); Ricardo Faleiro, (IT - Lisboa); José Senart (IT); Natalia Bruno (CNR-INO & LENS); Micael Andrade Dias (SENAI-CIMATEC); Chrysoula Vlachou (IT-Lisboa); Pedro Mendes (IST); Nikola Paunkovic (IST); Gonçalo Teixeira (IST); Marco Avesani (ThinkQuantum); Julian Van Velzen (Capgemini Engineering); and António Martins (Warpcom).

The workshop will focus on the topic of free-space quantum communication, an important topic for airborne and space-based quantum communication. Today, space-based quantum communication plays an important role in the development of a future global quantum communication network. In this context, new theoretical protocols and experimental methods must be developed.

DAY 1 - 08:30 Reception & Welcome	DAY 2
09:00 - Alessandro Zavata	09:00 - Chrysoula Vlachou
09:35 - Margarida Vieira	09:30 - Nikola Paunkovic
10:05 - COFFEE BREAK	10:00 - COFFEE BREAK
10:30 - Davide Rusca	10:30 - Marco Avesani
11:15 - Ricardo Faleiro	11:15 - Sara Mantey
11:45 - José Senart	11:45 - Leonardo Moura
12:15 - LUNCH	12:15 - LUNCH
14:00 - Natalia Bruno	14:00 - Julian Van Velzen
14:45 - Micael Andrade Dias	14:45 - António Martins
15:15 - Pedro Mendes	15:15 - Gonçalo Teixeira
15:45 - COFFEE BREAK	15:45 - COFFEE BREAK
16:30 - Poster Session	16:30 - Capgemini Demo + Posters

Workshop Program

PTQCI SUMMER SCHOOL: QUANTUM COMMUNICATION & SPACE - LISBON - PORTUGAL



Training on Quantum Communication & Space at PTQCI Summer School

On September 11th and 12th, the Instituto Superior Técnico, Oeiras Campus, hosted the PTQCI Summer School on Quantum Communication & Space. This initiative was developed within the scope of the PTQCI Portuguese Quantum Communication Infrastructure project. The event featured several sessions with renowned national and international experts, providing an opportunity for students to stay at the forefront of quantum technology and space exploration.

The program was designed to empower university students and young professionals, providing cutting-edge insights into quantum technology and space exploration.

The initiative was developed and organized by Manfred Niehus, from ISEL - Instituto Superior de Engenharia de Lisboa.

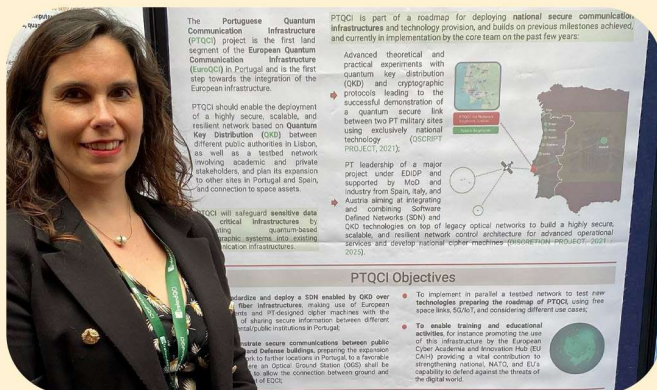
The PTQCI Summer School hosted 30 students and young professionals and included 13 training sessions led by experts from academia and industry.

The invited speakers were: Amita Shrestha (DLR); Bruno Gonçalves (Warpcom); David Alaluf (ESA); Davide Rusca (VigoQCC); Emmanuel Cruzeiro (IT Lisboa); Fernando Guiomar (IT Aveiro); Isabel Godinho (IPQ); João Paulo Monteiro (IST Nanosatlab); José Simão (ISEL); Marco Avesani (ThinkQuantum) Natalia Bruno (CNR-INO & LENS); Nuno Silva (IT Aveiro) and Rui Rocha (IST Nanosatlab).

Watch the videos [here](#).



Summer School Program



Catarina Bastos (Deimos) at the IrelandQCI Workshop

PTQCI PRESENTATION AT THE IRELANDQCI WORKSHOP

On the 2nd of July, Catarina Bastos, representing Deimos Engenharia, participated in the IrelandQCI Workshop.

She presented a poster of the Portuguese Quantum Communications Infrastructure - PTQCI project, highlighting its significant role in enhancing secure communications for national security. During her talk, Catarina discussed the use cases of the PTQCI in defense applications. The IrelandQCI project aims to deploy advanced national QCI systems and networks in Ireland.

PTQCI PRESENTATION AT THE HELLASQCI WORKSHOP IN GREECE

On the 4th of September, Catarina Bastos, representing Deimos and the Portuguese Quantum Communications Infrastructure - PTQCI project, participated in the panel "Challenges ahead on the road to EuroQCI" at HellasQCI, in Greece. Catarina discussed with colleagues from other National QCIs the status and the challenges of the projects and in particular what has been happening in Portugal.



Catarina Bastos (Deimos) at the HellasQCI Workshop

PTQCI MOOC AND E-BOOK

As part of the PTQCI exploitation plan, a MOOC (Massive Open Online Course) and e-book will be created to spread knowledge about quantum communication. The MOOC will consist of recorded lectures on various topics, providing students and professionals access to advanced insights into quantum communication.

The e-book will complement the MOOC by covering the same content in written form, offering detailed explanations, diagrams, and case studies. Together, the MOOC and e-book will provide a comprehensive educational resource, supporting PTQCI's goal of expanding knowledge in quantum communications.

PAPERS IN CONFERENCE

N. A. Silva, M. Almeida, N. J. Muga, A. N. Pinto, "Impact of Limited Classical Channel Bandwidth on the Secret Key Rate of a CV-QKD System," International Conf. on Transparent Networks – ICTON, Bari, Italy, 2024.

N. J. Muga, S. T. Mantey, N. A. Silva, M. Fernandes, G. Fernandes, F. P. Guiomar, P. Monteiro, A. N. Pinto, "Co-existence of Classical and Quantum Signals in Hybrid Fiber and Free-Space Optics Links for QKD Integration," International Conf. on Transparent Networks – ICTON, Bari, Italy, 2024.

Margarida Almeida, Armando N. Pinto, Nuno A. Silva, "An FPGA-based Physical Layer for a CV-QKD System", Proc. of VI Conference on Applications of Optics and Photonics, AOP2024, Aveiro, Portugal, July 16-19, 2024.

Mariline Costa, Sara Mantey, Nuno A. Silva, Armando N. Pinto, Nelson J. Muga, "Link Analysis for Satellite-Based Quantum Key Distribution", Proc. of VI Conference on Applications of Optics and Photonics, AOP2024, Aveiro, Portugal, July 16-19, 2024.

Niehus, M., Da Silva, J. C., Carvalho, J. M., Simão, J., Serrador, A., and Mendes, M. J. G. C. . "Towards a hardware-in-the-loop quantum optical ground station simulator and testbed," IEEE International Conference on Space Optical Systems and Applications (ICSOS). IEEE. DOI: 10.1109/ICSOS59710.2023.10491227

NOTES

As a way to promote the project and enhance its dissemination, a Pen drive (stationery material) was created to be given to the public during events and activities. The USB drive includes the PTQCI logo and a QR code.





LATEST CLIPPINGS

Notícias de Aveiro
AICEP
Universidade de Aveiro
Instituto de Telecomunicações
Aveiro TeckWeek
HellasQCI
Vigo Quantum Communication Center - VQCC

[Check out all the clippings on our website.](#)



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