QUANTUM COMMUNICATION & SPACE

SUMMER SCHOOL

PTQCI S. SCHOOL LISBON 2024
WHAT WILL HAPPEN?

PTQCI PROJECT
WHO'S ORGANIZING IT?

TAGUS PARK
WHERE IS IT TAKING PLACE?

OEIRAS, LISBON
WHERE IS IT LOCATED?

11 - 12 SEPTEMBER
WHEN WILL IT HAPPEN?

Nuno Silva | Instituto de Telecomunicações - Aveiro

Nuno Silva received the degree in Physics from the University of Minho, Braga, Portugal, and the master's degree in Physics from the University of Aveiro, Aveiro, Portugal, in 2006 and 2008, respectively. He received his Ph.D in Electrical Engineering at Aveiro University for research in quantum cryptography in optical-fibre communication systems in 2013. He was a Postdoctoral Researcher at the University of Aveiro and at the Institute of Telecommunications between 2014 and 2018, developing expertise in the field of classical information theory. Since 2019, is an Auxiliary Researcher at Instituto de Telecomunicações where he is developing expertise in the field of Optical Quantum Communications and Cryptography as a resource for secure multiparty computation. He is actively participating in several R&D projects. He teaches courses related to quantum optics and quantum technologies at both Physics Department and Electronics, Telecommunications and Informatics at the University of Aveiro. His current research interests include Optical Communications; Nonlinear Classical Optics; Optical Detection; Information Theory; Secure Multiparty Computation; Quantum Effects in Optical Waveguides; Single and Entangled Photonic States Generation and Detection; Practical Quantum Cryptography; Quantum Key Distribution, Quantum Bit Commitment, Quantum Oblivious Transfer; Quantum Oblivious Key Distribution; Quantum Homodyne and Heterodyne Detection.

Bruno Gonçalves | Warpcom

Bruno Gonçalves currently serves as the Cybersecurity Business Unit Manager at Warpcom Services, with over 10 years of experience in Network Engineering and Cybersecurity. His expertise extends to Security Operations Services, focused on addressing daily security needs across various market sectors including finance, industry, healthcare, and the public sector. Bruno was responsible for developing, coordinating, and maintaining policies, processes, and operational activities for an Information Security system (ISO27001:2013 certified).

He earned his Master's degree in Communication Networks Engineering from Instituto Superior Técnico - Universidade Técnica de Lisboa (IST-TUL) in 2010, during which he was involved with the CS5CEP working group at the Portuguese Space Agency and held leadership roles at the IST Student Branch. In 2019, he completed a Postgraduate program in Business Engineering for Digital Transformation at IST-TUL. More recently, he has been engaged in projects related to Quantum Networks and Quantum-Safe technologies.

Isabel Godinho | Instituto Português da Qualidade - IPQ

Isabel Godinho has a degree in Physics from the Faculty of Sciences of the University of Lisbon and a PhD in Physics from the same University. She is presently Director of the Metrology Department of the Instituto Português da Qualidade and responsible for the national metrology subsystem, in scientific, applied and legal metrology.

She is currently member of the Board of Directors in RELACRE, member of the Board of Directors in EURAMET, European Partnership on Metrology representative for Portugal, national representative on the *Bureau International des Poids et Mesures* and in the International Organization of Legal Metrology.

She joined the Electrical Metrology Laboratory of the National Institute of Engineering and Technology and Innovation (INETI-LME, Designated Institute for Electricity) in 1991 and she was involved in the development and materialization of standards in the fields of electrical, quantum metrology and acceleration.

She has participated in several R&D and cooperation projects and in technical assistance in twinning projects. Her research interest is on metrology, mainly in the field of quantum metrology, electricity and vibration.

João Paulo Monteiro | IST NanosatLab

João Paulo Monteiro graduated in Aerospace Engineering from IST. He has been the technical lead for ISTSat-1 since 2017, when the project was selected by the European Space Agency for the "Fly Your Satellite!" program. He is involved in various research activities related to small satellites at the IST NanosatLab.

Fernando Guiomar | Instituto de Telecomunicações

Fernando Guiomar received the M.Sc. degree in Electronics and Telecommunications Engineering in 2009, and the Ph.D. degree in Electrical Engineering in 2015, both from University of Aveiro, Portugal. From 2015 to 2017 he has worked with the OptCom group of Politecnico di Torino (in collaboration CISCO Optical GmbH, Nuremberg), as a post-doctoral researcher under the framework of a Marie Skłodowska-Curie Individual Fellowship, where he developed flexible modulation and DSP subsystems for elastic optical networks. He is currently a senior researcher at Instituto de Telecomunicações, where he is leading the development of high-capacity communication systems, including optical fiber (including access, metro and long-haul links) and optical wireless communications (including both free-space optics and visible light communications). Within these areas of research, his main technical contributions include the design of digital signal processing (DSP) algorithms and numerical simulation tools, nonlinear modeling and mitigation for optical fiber systems, the development of advanced modulation and coding schemes, and the optimization of optical communications systems using artificial intelligence. Fernando Guiomar is a member of Optica and a senior member of IEEE and he has co-authored more than 150 scientific publications in leading international journals and conferences. In 2016, he has received the Photonics21 Student Innovation Award, distinguishing industrial-oriented research with high impact in Europe. In 2020, he was awarded a 3-year research contract by the "la Caixa" Foundation within the framework of the Postdoctoral Junior Leader Fellowship program. He currently holds a permanent researcher position at Instituto de Telecomunicações - Aveiro, where he is managing several national and international research projects.

Rui Rocha | IST NanosatLab

Rui M. Rodrigues Rocha (IEEE S’89, M’94, SM'07) is an Associate Professor at the Department of Electrical and Computer Engineering in the Instituto Superior Técnico (IST), where he graduated and obtained his MSc and PhD degrees. From 1983 to 1986 he worked in Portugal Telecom as a R&D Engineer. Since 1986 he has been teaching computer architecture, broadband communications and wireless systems. In 2001, he launched the Information and Communication's Networks Engineering graduation programme at IST, which he coordinated until 2006.

He was a researcher at INESC from 1982 to 1997. Since 2001, he is affiliated with the “Instituto de Telecomunicações” in Lisbon. He has participated in several European projects, namely in RACE and later in the IST-framework programmes, as well as other national projects, covering areas ranging from heterogeneous communication networks to cyber-physical systems.

Since 2010 he has been interested in the development of small satellites, being responsible for the ISTSat-1 Project, integrated in the ESA Education program “Fly Your Satellite!”. He is co-founder and current co-director of the IST NanosatLab.

Amita Shrestha | Institute of Communications and Navigation in German Aerospace Center

Amita Shrestha is currently leading the Optical Ground Stations Group in the institute of Communications and Navigation in German Aerospace Center, DLR. She received the Masters (MSc) degree in Communications, Systems, and Electronics from the Jacobs University in Bremen in 2009. In 2010, she joined Institute of Communications and Navigation in German Aerospace Center (DLR). In DLR, she worked in the design, development, and operation of operation software for optical terminals. Since few years, she is actively involved in the CCSDS standardization of Optical Communication technology on behalf of DLR. She has also supported and led different projects related to development of optical transceivers, study of free-space optical channels, variable data rate techniques for such channels, and development of the ground station for classical and QKD applications. Her special research interest is the free-space high speed optical communication from space to the ground.

José Simão | ISEL/IPL

José Simão is a Professor Adjunto at the Engineering School of the Polytechnic Institute of Lisbon (ISEL/IPL), specializing in n the areas of distributed systems, cloud computing, and computer security. He holds a PhD in Informatics and Computer Engineering from the University of Lisbon (IST) and is a researcher at INESC-ID Lisboa, affiliated with the Distributed Systems Group.

At ISEL, he is a member of the Future Internet Technologies (FIT), a research group with a strong connection to society. His research explores cloud infrastructure and services, particularly on Serverless architectures. He has contributed to significant projects, including developing new cryptographic services for the National Security Office using the Portuguese Public Key Infrastructure. In his relationship with Municipalities and the IT industry, he has provided consultancy about smart cities and secure mobile payment systems.

He is the co-author of more than 30 publications in peer-reviewed journals and conferences. He is currently a member of the coordination board of the computer engineering and informatics bachelor (LEIC) and master (MEIC) degrees at ISEL.

David Alauf | European Space Agency (ESA)

Dr. David Alaluf is research engineer in the opto-electronics section of the European Space Agency (ESA), working in the field of Adaptive Optics and atmospheric turbulence related issues, with application namely to optical communications, astronomy and space surveillance and tracking.

David first joined ESA in 2016 for a 4-years PostDoc, working in close cooperation with the European Southern Observatory (ESO) on Laser Guide Star based Adaptive Optics methods then became permanent staff of the Agency.

Before joining ESA, David carried out research in the field of particle physics for the Conseil Européen pour la Recherche Nucléaire (CERN), then graduated with a PhD from Université Libre de Bruxelles, where he studied Deformable mirrors for space telescopes.

Since he joined ESA, in 2016, David is pushing developments on various aspects related to atmospheric turbulence such as deformable mirrors, wavefront sensors, laser guide stars, modelling, monitoring and forecasting equipment.