RoNaQCI Festival – 18-20 June 2025

Romanian National Quantum Communication Infrastructure

National University of Science and Technology **POLITEHNICA Bucharest**

Press release

Quantum technologies (QT) are among the 18 critical and emerging technologies listed by the US National Security Council as being "of particular importance to the national security of the United States". Throughout the entire world, both private and public investments have gone towards quantum technologies, with an **8.5 billion dollars** total cumulative global QT start-up investment, **42 billion dollars** total government investments announced, an estimated **market size by 2040 of up to 173 billion** dollars throughout various quantum technologies (quantum computing, quantum communication, quantum sensing), and a total economic value from quantum computing in 2035 of **up to 2 trillion dollars**, according to McKinsey & Company's Quantum Report 2024. A particularly significant impact of quantum computing is in digital security; according to the same report, the encryption algorithm most widely used in today's **Internet communications (RSA) may be broken by quantum computers as early as 2027**. This is the reason why secure quantum communication technologies, such as quantum key distribution (QKD), are expected to increase to 36 billion dollars in market size by 2040, and it is also the reason why at European and global levels significant funding and sustained efforts have been made towards implementing secure QKD networks.

Within the field of quantum communications, Romania is participating in EuroQCI via **Romanian National Quantum Communication Infrastructure – RoNaQCI (ronaqci.eu)**, coordinated by POLITEHNICA Bucharest (with **30 partnering institutions and companies** from RO), aiming to build the largest QKD network in EuroQCI, with **36 total QKD** links covering **1500+ km** in six metropolitan networks in the cities of Bucharest, Iași, Timișoara, Craiova, Cluj-Napoca, and Constanța, and connected by a national QKD backbone and providing secure applications for special communications, medical data, education, research, data center activities, and more. A national network of **19+ Quantum HUBs** has also been recently established throughout Romania for research and education, which performed **10+ trainings** for more than **1000 users** with more than **500 diplomas** awarded. RoNaQCI achievements also include the publication of the RoNaQCI book on **Basic Quantum Knowledge**, **10+ scientific publications** in high impact venues, and **9+ quantum software repositories** (some open-source).

Within the **International Year of Quantum (2025)**, RoNaQCI is **organizing the RoNaQCI Festival on 18-20 June 2025, in Bucharest, Romania**. The Festival will include invitees from national and European high-impact political structures, **research presentations**, and updates on the Romanian QKD infrastructure. During the event, several award galas will be held: awards of the **official quantum certification** organized by RoNaQCI; awards for the **Quantum Hackaton** for students organized in the week prior; and honorary awards for the graduates of the **Quantum Computing MSc program** at POLITEHNICA Bucharest (2023-2025), the **1st quantum MSc program in Romania**. The book on **Basic Quantum Knowledge will be freely distributed to the participants**. Additionally, the Festival celebrates two important events: the **10 years anniversary of the Quantum Team** at POLITEHNICA Bucharest, and the **50 years anniversary of the first microprocessor computer built in Romania** by our mentor, Prof. Acad. Nicolae Țăpuș.