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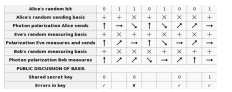

A basic view of how quantum encryption looks like in codes
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Large-Scale Quantum Networks Proof-of-Concept Created

European researchers send quantum encrypted data over kilometers

More than 41 research and industrial organizations in Europe have recently joined efforts in their attempt to create the world's largest quantum key distribution network, through which data are transfered using only quantum inscription. This is by far the largest such network ever built anywhere on the globe, and what makes it even more special is the fact that it contains eight nodes and also that it's organized like a mesh.

The average length between links is of 20 to 30 kilometers, but links as far away as 83 kilometers also exist. Among the most famous institutes involved in creating the network are the AIT Austrian Institute of Technology (formerly, Austrian Research Centers), id Quantique, Toshiba Research, in the UK, Universite de Geneve, the University of Vienna, CNRS, Thales, LMU Munich, Siemens, and many others. Together, these players have taken a huge step forward in setting the basis for wide-scale implementation of quantum networks, and also in the field of encrypted data transmission over very large distances, proving that such communications are both feasible and obtainable at a reasonable price.

A study detailing all major aspects of the innovative network has been published in a recent Focus Issue on "Quantum Cryptography: Theory and Practice" of the New Journal of Physics, a publication of the Institute of Physics Publishing. The quantum key distribution (QKD) network was mainly developed using fiber optics cables for Siemens, and was set up at four of the company's dependencies across Vienna. A repeater station was also built near St. Polten, in Lower Austria, and the researchers involved with the project sent video and audio signals through it, held video conferences, and also rerouted the signal to other locations.

These feats again prove the functionality of the SEcure COmmunication network based on Quantum Cryptography (SECOQC) project, they say, adding that quantum cryptography is among the first components of the sometimes mystic field of quantum physics and mechanics to soon be achieved in real-life. Once implemented, SECOQC-like networks will bring about a new era of secure information, and also of unbreakable codes. "In our paper we have put forward, for the first time, a systematic design that allows unrestricted scalability and interoperability of QKD technologies," the team write in the journal entry.