

# Making Quantum Technologies more accessible: A new approach to bring the future closer

*Wednesday 12 October 2022 15:00 (30 minutes)*

For the first time, Quantum Technologies and Quantum Physics are available at an understanding level that anyone can use and interpret. In the early years of the 20th century, Quantum Physics theory became more and more complicated as well as refreshing. This knowledge was only available to theoreticians and people with high-level studies, but now, it is possible to figure out how complex systems work in the nanoscale whilst, for instance, we simulate a molecule in research for a new medical drug using a Quantum Computer simulator. Quantum Technologies are now used as a tool to understand the inside Nature's processes, this fact releases new and powerful information that was hidden from us until now.

From the last years of the 20th century until now, superconductive materials based on CMOS technology, took the Quantum scene to make circuits that hold the fundamental information unit, the Qubit. It is now when Quantum Computers based on this technology begin to be available to everybody, but nevertheless, there are drawbacks that we must deal with, like the stable lifetime of the Qubits, called decoherence time. Many other technologies hold Qubits in hardware like photons, single electrons, superconductive rings, magnetic molecules, or superconductive resonators. Although there are several alternatives, we still do not have a winning technology.

We present the whole spectrum of Quantum Technologies available and ready to use right now for many knowledge fields, and how the community can take advantage of this new paradigm. There are more to come and research in areas like Quantum Computation, Quantum Machine Learning, Quantum Chemistry, Quantum Biology, and Quantum Finance. Many companies claim a Quantum Leap achievement on focused issues, but, it is still needed a complete citizen ecosystem that brings the Quantum advantages to the general audience. Thus, along with Quantum Technologies, we present the Quantum Spain initiative, which aims to bring a public use of the Quantum Computation power to every citizen, research group and company in Spain.

**Primary author:** Mr MARTÍNEZ-LOSA, Sergio (Instituto de Biocomputación y Física de Sistemas Complejos (BIFI), Universidad de Zaragoza)

**Co-author:** Prof. IÑIGUEZ DIESTE, David (Instituto de Biocomputación y Física de Sistemas Complejos - Fundacion ARAID)

**Presenter:** Mr MARTÍNEZ-LOSA, Sergio (Instituto de Biocomputación y Física de Sistemas Complejos (BIFI), Universidad de Zaragoza)

**Session Classification:** IBERGRID Contributions

**Track Classification:** R&D for computing services, networking, and data-driven science