

# CERN welcomes INFN and IIT as new members of its IBM Quantum Network hub

Two European research institutes – INFN (Istituto Nazionale di Fisica Nucleare) and IIT (Italian Institute of Technology) – have recently signed an agreement to become the latest members of CERN’s hub in the [IBM Quantum Network](#). The move will see both institutes working closely with CERN to help investigate the full potential of the nascent quantum computing technology, sharing access to IBM’s fleet of



more than 20 quantum computers accessible on the cloud.

The next generation of computing technology holds great promise for supporting scientific research. Quantum computers may offer the necessary tools to perform more complicated computing tasks than ever and search for more deeply hidden patterns, thus helping to produce technical breakthroughs and advance scientific understanding of the universe.

Having members like INFN and IIT joining the hub will help CERN – through its Quantum Technology Initiative (QTI) – to drive investigations into how quantum technologies can support the LHC research community, as well as other scientific fields.

“The mission of the CERN hub is to explore promising applications of quantum computing for high-energy physics and beyond together with academia and research institutes in the CERN Member States,” says Alberto Di Meglio, Coordinator of the CERN Quantum Technology Initiative. “[IBM Quantum Network](#)” (Image: CERN)

pleased to have INFN and IIT joining us now in the effort to foster quantum developments, exchange knowledge and innovation, and deploy R&D projects to the benefit of all.”

“The signing of this agreement with CERN is another important step for INFN in the framework of its activities on Quantum Information Science and Quantum Technologies,” says Valter Bonvicini, coordinator of the INFN quantum initiatives and member of the Advisory Board of CERN QTI. “The agreement will provide the INFN community, both theoretical and experimental, a fast access to high-quality machines within the IBM Quantum Network. INFN considers teaming with other key players sharing scientific interests or technology options in the field of QIS/QT as a very important aspect”.

Uniting endeavours and establishing joint activities will help members of the hub to explore the complex nature of quantum computing technology toward unlocking the full potential it could offer to speed up computationally expensive tasks.

“Quantum computing represents one of the concrete applications of quantum mechanical laws. It is fascinating to witness how quantum information evolves, along with the many quantum computational experiments that may have a real advantage for specific applications,” says Andrea Cavalli, Associate Director for Computational Sciences and Vice-Scientific Director, Istituto Italiano di Tecnologia. “Building quantum computers large enough to supersede the current high-performance-computing (HPC) infrastructures is a goal of quantum computing technologists. Very likely, we will go through a hybrid era where classical computing and quantum computing will work together, where certain algorithms will be more suited for quantum machines and classical HW architectures will solve others more efficiently. Certainly, an institute like IIT, which has always been at the edge of new technologies, will try to play a key role in the quantum revolution we are witnessing.”

Following the agreement, the members of the hub are now planning a joint technical kick-off event later this year, hosted at CERN with the support of the CERN Quantum Technology Initiative.