



The Abdus Salam  
International Centre  
for Theoretical Physics



# Conference on New Frontiers in Scaling Quantum: from Materials and Hardware to Architectures and Components

## Description:

The central challenge in building a scalable quantum computer is achieving effective quantum error correction (QEC). Large arrays of superconducting qubits are currently a leading platform for the implementation of QEC. The success of these implementations relies on the synergy of accurate understanding of the device physics and associated noise, of efficient and practical quantum codes, and of the integration of these two in the form of tileable architectures.

## MORE DETAILS:

In this conference, we plan to bring together scientists working in the following four areas:

- Moiré excitons
- New materials and hardware foundations
- New quantum LDPC codes
- New hardware architectures and components

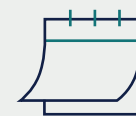
and encourage stronger communication between them.

We especially hope to foster improved interactions between industry and academia.

## SPEAKERS:

L. Ateshian, MIT, USA  
D. Bacon, Google, USA  
M. Carroll, IBM, USA  
N. de Leon, Princeton University, USA  
C. Deng, Alibaba, China  
M. Devoret, Google and Yale, USA  
R. Gao, Alibaba, China  
C. Gidney, Google, USA  
T. Gozlinski, Karlsruhe Institute of Technology, Germany  
W. Livingston, Google, USA  
R. McDermott, UW Madison, USA  
A. McDonald, University of Sherbrooke, Canada  
A. Megrant, Google, USA  
D. Pappas, Rigetti, USA

B. Plourde, Syracuse University, USA  
I. Pop, KIT, Karlsruhe, Germany  
N. Roch, Neel Institute Grenoble, France  
D. Rower, MIT, USA  
B. Sacepe, Neel Institute Grenoble, France  
B.M. Smitham, Princeton University, USA  
Y. Tabuchi, Japan  
G. Tancredi, Chalmers University of Technology, Sweden  
A. Ustinov, KIT, Karlsruhe, Germany  
A. Wallraff, ETH, Switzerland  
F. Yan, Beijing Academy of Quantum Information Science, China



15 - 19 January 2024



Trieste, Italy



**Application and Deadlines:**

**22 October 2023**

For participants asking for financial support.

**15 December 2023**

For all participants.

## DIRECTORS:

L. FAORO, Google Quantum AI Santa Barbara (USA)  
R. FAZIO, ICTP, Italy  
M. McEWEN, Quantum AI Santa Barbara (USA)  
A. SCARDICCHIO, ICTP, Italy

## GRANTS:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

## FURTHER INFORMATION:



E-mail: [smr3916@ictp.it](mailto:smr3916@ictp.it)

Web: <http://indico.ictp.it/event/10454/>

Female scientists are encouraged to apply.

