

# International Workshop on Cryogenic Electronics for Quantum Systems (IceQubes)

2 – 4 June, 2021

*Towards scaling*

Program (all times are in GMT+2)

**Wednesday, June 2<sup>nd</sup>, 2021**

**Session 1 – The Importance of Scaling**

12:00 – 12:20 Edoardo Charbon, EPFL and Farah Fahim, Fermilab

*Welcome to IceQubes 2021*

12:25 – 13:00 David Reilly, Univ. of Sydney and Microsoft Corp.

*Distributed Cryogenic CMOS Platform for Autonomous Quantum Control*

13:05 – 13:40 Hendrik Bluhm, RTWH Aachen

*A qubit simulation framework for architecture and control system design*

13:45 – 14:20 M. Fernando Gonzalez-Zalba, Quantum Motion

*High-fidelity single shot readout of electron spins in industry-fabricated silicon quantum dots*

14:20 – 15:40 Break

14:40 – 15:15 Andreas Kuhlmann, University of Basel

*A spin qubit in a fin field-effect transistor operating above 4 K*

15:20 – 15:55 Markus Arndt, Univ. of Vienna

*Quantum Technologies for Mass Spectrometry and Molecule Analysis*

16:00 – 16:35 Heike Riel / Matthias Steffen, IBM

*TBD*

16:35 – 16:45 Break

**Session 2 – Keynote**

16:45 – 17:00 Martin Vetterli, EPFL

*Preface*

17:00 – 18:00 John Martinis, University of California, Santa Barbara

*Quantum supremacy as a path to scaling*

18:00 – 19:00 Virtual apéro

**Thursday, June 3<sup>rd</sup>, 2021**

**Session 3 – Technologies, Devices, and Components**

14:00 – 14:35 Philippe Galy, STMicroelectronics

*Overview on FD-SOI technology under cryogenic temperature for qubit investigation*

14:40 – 15:15 Gerd Kiene, TU Delft

*A high-speed cryogenic ADC for quantum computing*

15:20 – 15:55 Joseph Bardin, University of Massachusetts

*low-power and reconfigurable cryogenic LNAs*

16:00 – 16:35 Florent Lecocq, NIST

*Hardware for efficient measurements and massive signal delivery in superconducting quantum processors*

16:35 – 17:10 Break

**Session 4 – Cryogenic Nanowires**

17:10 – 17:45 Dmitry Morozov, University of Glasgow

*Mid Infrared Superconducting Nanowire Single Photon Detectors*

17:50 – 18:25 Karl Berggren, MIT

*The Cryotron Reborn: Superconducting-Nanostrip-Based Electronics*

18:30 – 19:05 SaeWoo, NIST

*TBD*

19:10 – 19:45 Alexander Choi, Caltech

*Towards the lower limits of microwave noise in HEMTs: self-heating and real-space transfer*

19:45 – 21:00 Virtual apéro

**Friday, June 4<sup>th</sup>, 2021**

**Session 5: Cryo-CMOS Modeling and Qubit Control**

13:20 – 13:55 Christian Enz, EPFL

*MOSFET modeling at cryogenic temperatures*

14:00 – 14:35 David Ibberson, Quantum Motion

*Co-integrated superconducting-silicon CMOS technology for fast gate-based dispersive readout*

14:40 – 15:15 Bagas Prabowo, TU Delft

*A 6-to-8GHz 0.17mW/Qubit Cryogenic CMOS Receiver for Multiple Spin Qubit Readout*

15:20 – 15:55 Carsten Degenhardt, FZ-Jülich

*Cryogenic Qubit Control – The tyranny of numbers, self-heating and everything*

15:55 – 16:30 Break

16:30 – 17:05 Shai Bonen, Univ. of Toronto

*Investigation of the impact of layout geometry and terminal voltages on the cryogenic characteristics of SiGe and Si Quantum Dots*

17:10 – 17:45 Dirk Leipold, equal1

*Integrated quantum / classic neural networks*

17:50 – 18:25 Andrea Ruffino

*Towards fully-integrated cryo-CMOS interfaces for high temperature qubits*

18:30 – 19:05 Stefano Pellerano, Intel

*Horse Ridge: Intel Cryogenic Qubit Control SoC for Quantum Computing*

19:10 – 19:45 Farah Fahim, Fermilab

*TBD*

19:45 – 20:00 Edoardo Charbon, EPFL and Farah Fahim, Fermilab

*Closing*