An online workshop on quantum error correction and fault tolerance

What: A webinar replacement for the planned meeting in Benasque.
When: 6 days over 2 weeks, 11th-20th August 2020
Format: 2-3 talks per day. Talks over zoom with a slack channel for sidechat.
Registration: Free, but register here http://benasque.org/2020ftqt/

Conference chairs	Nonlocal organisation
Earl Campbell - Amazon	Nikolas Breuckmann - UC London
Barbara Terhal - TU Delft	Joschka Roffe - Sheffield
Steve Flammia - Amazon	Boris Varbanov - TU Delft

CET: all times are on Central European Time
All theory talks are 35 minutes + 5 minutes for questions.

SLACK: Stay up-to date on programme changes and join the conversation here:
https://join.slack.com/t/ftqt2020/shared_invite/zt-ghkr8990-MYQkGNiUd~T_oJOnC3EGWw
GOOGLE calendar: you can add the talk to your Google calendar here:
https://calendar.google.com/calendar/b/2?cid=ZnRxdDIwMjBAZ21haWwuY29t

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SPONSORS

QCDA: Quantum Code Design & Architecture is a European network of researchers working on quantum error correction and fault-tolerance. It is supported by the EU and national governments through QuantERA. You can learn more here: http://www.qcda.eu/
We also have an online series of biweekly talks, organised by Niko Breuckmann, who you should contact if you wish to speak or join the mailing list (nikobreu@gmail.com)

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WEEK ONE

Session I: TUESDAY 11th AUGUST

Chair: Earl Campbell Zoom: https://us02web.zoom.us/j/82557614705

16:40-17:20 CET	Markus Müller - RWTH Aachen University *Fighting qubit loss in topological QEC codes in theory and experiment*
17:20-18:00 CET	Chris Chamberland - Amazon *Very low overhead fault-tolerant magic state preparation using redundant ancilla encoding and flag qubits*
18:00-18:40 CET	Tomas Jochym O'Connor - IBM Research *Generalizations of 4D toric codes for logical non-Clifford gates*

Session II: WEDNESDAY 12th AUGUST

Chair: Earl Campbell Zoom: https://us02web.zoom.us/j/81273715562

9:00-9:40 CET	Ben Brown - University of Sydney *Universal fault-tolerant measurement-based quantum computation*
9:40-10:20 CET	Nikolas Breuckmann - University College London *Quantum LDPC Subsystem Code Construction: Check-Weight Reduction and Improved Quantum Error Correction by Gauge-Fixing.*
10:20-11:00 CET	Markus Kesselring - Freie Universität Berlin Fault-tolerant non-Clifford gates by braiding color code defects

Session III: THURSDAY 13th AUGUST

Chair: Steve Flammia Zoom: https://us02web.zoom.us/j/83288825539

16:40-17:20 CET	Gilles Zémor - Bordeaux University *Decodable quantum LDPC codes beyond the $\sqrt{n}$ distance barrier using high dimensional expanders*
17:20-18:00 CET	Nicolas Delfosse - Microsoft *Beyond single-shot fault-tolerant quantum error correction*

WEEK TWO

Session IV: TUESDAY 18th AUGUST

Chair: Barbara Terhal Zoom https://us02web.zoom.us/j/87072934925

16:40-17:20 CET	Shurti Puri - Yale University *Quantum error correction with biased noise cat-qubits.*
17:20-18:00 CET	Guillaume Dauphinais & Krishnakumar Sabapathy - Xanadu *Quantum computation using realistic bosonic encodings*
18:00-18:40 CET	Margret Heinze - TU München Enhanced noise resilience of the surface-GKP code via designed bias

Session V: WEDNESDAY 19th AUGUST

Chair: Barbara Terhal Zoom https://us02web.zoom.us/j/89189114575

9:00-9:40 CET	David Tuckett - University of Sydney *Resilience of tailored surface codes to biased noise*
9:40-10:30 CET	**An extended experimental talk on superconducting qubits** Leo DiCarlo - TU Delft *Title: TBA*
10:30-10:40 CET	Break
10:40-11:20 CET	Nicolas Menicucci - RMIT Title: Modular bosonic subsystem codes

Session VI: THURSDAY 20th AUGUST

Chair: Steve Flammia Zoom https://us02web.zoom.us/j/89009503680

16:40-17:20 CET	Naomi Nickerson - Psi Quantum *Unique architectures for photonic quantum computing*
17:20-18:00 CET	Ken Brown - Duke University *Compass Codes: Theory and Practice*
18:00-18:40 CET	Ted Yoder - IBM Research *A graph-based formalism for surface code twists*