Topologically protected and scalable quantum bits (TOPSQUAD)

and

Andreev qubits for scalable quantum computation (ANDQC)

Bound states in superconducting nanodevices

https://www.boundstates2023.eu/

Final programme

11 – 14 June 2023

Conference Centre

Margaret Island (Margitsziget)

Budapest, Hungary

Logistical information:

Sunday evening: The **conference center has its own entrance and lobby** – please come to the right place for the reception.

Programme timeslots: Please note that the programme is very tight due to the large number of speakers – which we, of course, are very happy about. But in terms of logistics, it means that **time slots must be kept** as there is no room for any flexibility for going overtime with any talk.

Poster setup: you are asked to set up your poster **at the first coffee break at 10:40 on Monday**. Please ask at the **registration desk** for help and/or material. Remove your poster before the end of the conference.

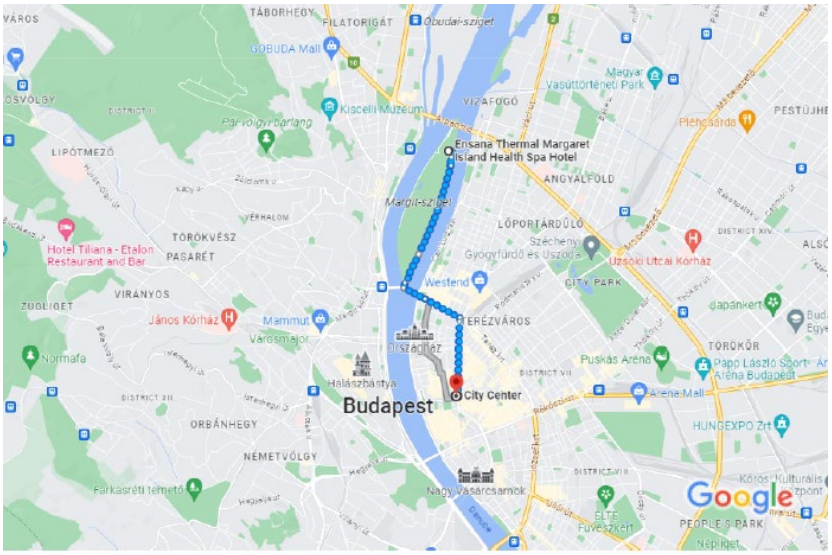
Bring your own paper and pen – we try to be as sustainable as possible in the arrangements of the conference.

Funded by the European Union

Lunch will be served all days **at the hotel restaurant**.

Monday evening: you are expected to go for dinner at a restaurant of your own choice **at your own expense**.

Exploring the city centre on Monday evening: Please note that the city centre is about 4.5 km from the island. Please ask at the registration desk or hotel lobby for further guidance. We'll try to obtain city maps in advance but cannot make any promises.



Tuesday Group photo at first coffee break: Note that we plan for a group photo at the **first coffee break at 10:40** on Tuesday, if the weather is fine at the stairs next to the entrance of the conference centre. Again, be there in time so that you don't miss this opportunity.

Tuesday evening: You are very much invited to join us for the **boat trip** on the river Danube. Please note that the **boat will leave at 18:15 sharp**. It's just 2 mins walk from the conference centre but please be there in time.

Dresscode for boat trip: Informal – bring a warmer sweater for the time after sunset.

Invited speaker talk	Each talk à 35 mins + 5 mins Q&A
Tutorial talk	Each talk à 45 mins + 15 mins Q&A
Contributed talk	Each talk à 15 mins incl Q&A

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	Day 1: Sunday 11 June 2023
18:00 - 19:00	Conference registration open at the conference centre lobby
19:00 – 20:30	Welcome reception including fingerfood at the conference centre lobby 

	Day 2: Monday 12 June 2023
08:00 – 08:50	Conference registration open
08:50 – 09:00	Opening of the Conference, Floris Zwanenburg, University Twente, The Netherlands
	Session 1 – Chair Jelena Klinovaja, University of Basel, Switzerland
09:00 – 10:00	Jens Paaske, University of Copenhagen, Denmark Yu-Shiba-Rusinov states in proximitized quantum dots
10:00 – 10:40	Elsa Prada, Material Science Institute of Madrid, Spain Caroli-de Gennes-Matricon analogs in full-shell nanowires
10:40 – 11:25	Coffee break and putting-up posters (45 min)
11:25 – 11:40	Alfredo Levy Yeyati, Autonomous University of Madrid, Spain Dynamical parity selection in superconducting weak links
11:40 – 11:55	Stefan Heun, NEST, Istituto Nanoscienze-CNR, Italy Half-integer Shapiro steps in InSb/Nb Josephson junctions

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	Day 2: Monday 12 June 2023
11:55 – 12:10	Marco Valentini, Institute of Science and Technology, Austria Tunable superconductivity and engineered current-phase relation in planar Germanium
12:10 – 14:00	Lunch
	Session 2 – Chair Szabolcs Csonka, BME, Hungary
14:00 – 14:40	Javad Shabani, New York University, USA Towards realization of protected qubits using topological superconductivity
14:40 – 14:55	Andras Palyi, Budapest University, Hungary Braiding-based quantum control of a Majorana qubit built from quantum dots
14:55 – 15:10	Zhen Wu, University of Twente, The Netherlands Andreev states in Ge-Si core-shell nanowire Josephson devices
15:10 – 15:25	Christian Schönenberger, University of Basel, Switzerland Current-Phase Relation of Hybrid Semiconductor-Superconductor Gatemon Devices
15:25- 16:05	Coffee break (30 min)
16:05 – 16:45	Valla Fatemi, Cornell University, New York, USA Probing Andreev bound states with circuit quantum electrodynamics
16:45 – 17:00	Rubén Seoane Souto, Autonomous University of Madrid, Spain Superconductor-semiconductor hybrid devices for quantum science and technology
17:00 – 17:15	Francesco Zatelli, TU Delft, The Netherlands Enhanced Majorana stability in proximitized quantum dots
17:15 – 17:55	Liliana Arrachea, Universidad Nacional de San Martín - Buenos Aires, Argentina Josephson junctions of two-dimensional time-reversal invariant superconductors: Signatures of the topological phase
17:55 – 19:00	Poster session (including drinks)

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	Day 3: Tuesday 13 June 2023
	Session 3 – Chair Jens Paaske, University of Copenhagen, Denmark
09:00 – 10:00	Jesper Nygård, Niels Bohr Institute, University of Copenhagen, Denmark Nanowire platforms for hybrid quantum dot systems
10:00 – 10:40	Alberto Tosato, TU Delft, The Netherlands The germanium quantum information route: past achievements, present challenges, future opportunities
10:40 – 11:40	Group photo and coffee break (60 min)
11:40 – 11:55	Henry Legg, University of Basel, Switzerland Parity protected superconducting diode effect in topological Josephson junctions
11:55 – 12:10	Patrick Zellekens, RIKEN Center for Emergent Matter Science, Japan Flux-periodic supercurrent oscillations in GaAs/InAs/Al core/shell/halfshell nanowire Josephson junctions
12:10 – 12:30	Rok Zitko, Jozef Stefan Institute & University of Ljubljana, Slovenia Richardson model description of spin-orbit coupling in superconducting islands
12:30 – 14:30	Lunch
	Session 4 – Chair Alexander Brinkman, University Twente, The Netherlands
14:30 – 15:10	Fabrizio Nichele, IBM Zurich Research, Switzerland Hybridisation of Andreev bound states in three-terminal Josephson junctions
15:10 - 15:25	Péter Makk, Dept. of Physics, Budapest University, Hungary Investigation of graphene-based multi-terminal Josephson junctions
15:25 – 15:40	Zoltán Scherübl, BME Department of Physics, Hungary Strong nonlocal tuning of the current-phase relation of an Andreev molecule
15:40 – 16:20	Yuval Oreg, Weizmann Institute of Science, Israel Topological superconductivity by phase tuning
16:20 – 16:40	Coffee break (20 min)

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	Day 3: Tuesday 13 June 2023
16:40 – 17:20	**Moira Hocevar, Institut Néel, Grenoble, France** **Semiconductor core-shell nanowires and superconductor hybrid nanostructures**
17:20 – 17:35	**Julien Barrier, University of Manchester, UK** **Unidimensional Andreev bound states using quantum Hall edges**
17:45 – 18:15	**Boarding dinner boat - gathering at the registration desk**
18:15	**Boat leaves in time**
18:15 – 20:40	**Dinner at the boat**
	Day 4: Wednesday 14 June 2023
	Session 5 – Chair Erik Bakkers, University Twente, The Netherlands
09:00 – 10:00	**Alexander Brinkman, University Twente, The Netherlands** **Josephson junctions with topological interlayers**
10:00 – 10:40	**Coffee break (40 min)**
10:40 – 10:55	**Jukka Vayrynen, Purdue University, USA** **Microwave spectroscopy of Majorana vortex modes**
10:55 – 11:10	**Ireneusz Weymann, Institute of Spintronics and Quantum Information, Adam Mickiewicz University, Poznań, Poland** **Signatures of Majorana modes leaking into double quantum dot systems**
11:10 – 11:50	**Yuli Nazarov, TU Delft, The Netherlands** **Josephson Quantum Mechanics at Odd Parity**
11:50 – 12:05	**Andreas Baumgartner, University of Basel Switzerland, Andreev bound state fusion**
12:05 – 12:15	**Closing of the Conference** **Attila Geresdi, Chalmers University, Sweden**
12:30 – 14:00	**Lunch**

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