

Semester report - Fall semester 2023

In this report we give an overview of the activities the QEC has organized during this semester.

We thank AMIV, VSETH, the Quantum Center, as well as the companies who sponsored our events for their great support!



General assembly, 10th of October 2023

Quantum Paper Club

The Quantum Paper Club remains an important branch of the QEC: As in the last semesters, we organized a talk every Thursday evening. We invited a diverse group of speakers, consisting of professors, postdocs, PhDs, master and bachelor students, as well as experts from industry. The talks covered a wide range of topics, from trapped ions, superconducting qubits, NV-centers and quantum algorithms to more theoretical talks about quantum information theory and quantum gravity.

These talks are a great way to learn about new topics and to get to know many researchers from different groups at ETH, as well as from other places in Europe. In order to foster networking between the students and speakers, we organized an apéro after two of the talks.

In the future, we are planning to include representatives from industry in this series. The goal is to replace one academic talk with a (virtual) industrial talk once a month. For a start, we concluded the Fall semester with a talk by Dr. Ronan Gautier from Alice&Bob, a French start-up.

A list of all paper club talks is available on our [website](#).



Quantum Paper Club, November 23, 2023 with Guglielmo Mazzola, Assistant Professor at UZH

QEC Hike

On the weekend of the 29th and 30th of July this summer, we spent a great time hiking in the Swiss mountains. With our group of 29 people, we hiked up to Etzlihütte on Saturday morning, a beautiful SAC hut at the border between Uri and Graubünden. After lunch, some people went climbing, others continued hiking, and some went swimming in a close-by lake. We had delicious food in the evening, and we were happy to make use of the jacuzzi on the terrace after dinner. Sunday was another day of hiking where we split up into smaller groups doing hikes of different difficulty. Overall, this weekend was a very bonding experience for students across all years as well as QEC alumni, and there was plenty of time to talk and laugh together in an environment outside of university.



Welcome Week

To welcome the new quantum engineers in Zurich and at ETH, we organized many introduction events during the first week of the semester. Apart from building the community within the batch, these events were crucial to motivate the next generation to become active in the QEC.

On Monday, the 16th of September, we started out by welcoming everyone in the HPH foyer and handing out a QEC-branded bag with their QEC hoodie, a QEC pen, and some stickers. After a group game to get to know each other, we toured both campuses and ended the day with some drinks at the bQm bar.

Tuesday was reserved for the official introduction by the department. During the initial presentation, some QEC board members presented the QEC and its organizational structure to the new students. To foster the community across the different QE years, around 20 older students joined the official welcome apéro on Höggerberg.

On Wednesday, we had a large BBQ on Käferberg, where all quantum engineers were invited. We were pleased to see that around 70 students from all the MSc QE years joined. Apart from offering an opportunity to reconvene with old friends, many experiences and tips were handed down to the first generation, and plenty of connections between different years were formed. This event also introduced the mentees from the first year to their student mentors from the QEC mentoring program.

Friday's semester opening party concluded the welcome week in a festive atmosphere with around 40 participants, primarily from the 2023 and 2022 MSc QE batch.



Quantum Industry Day 2023

On October 16th, the Quantum Industry Day took place in Lausanne. The QEC organized a group trip for all ETH students interested in joining. Around 50 students boarded the early train to Lausanne. We advertised the trip in the QIP 1&2 lectures, which led to a great number of MSc physics students joining. We are happy to report that this supports the general trend of more physics students attending QEC events, reflecting the interdisciplinary nature of our association.

Apart from being introduced to the industrial quantum landscape in Switzerland, we met many representatives from quantum companies as well as students from EPFL, particularly from the MSc Quantum Science and Engineering. In the afternoon, these students gave us a campus tour of EPFL.





Escape room

On the 20th of November, we organized an escape room event for 30 students. Teams of six were tasked with solving puzzles to find the way out of the room. This activity strengthened the sense of community in a fun and interactive way. About one third of the participants were non-QE students, mainly physicists but also from computer science and interdisciplinary sciences.



QEC Fondue

On December 7th, we continued one of the longest standing QEC traditions: the annual Fondue. More than 60 students from all years since the beginning of the MSc QE program convened for a Swiss classic.

We used the large number of participants as an opportunity to elect the next president and treasurer of the QEC, and to thank this year's QEC board for all their efforts. Four candidates were given the chance to introduce themselves, then the election took place. After counting the votes, Rémi Truong and Alba Spahiu were elected as the new president and treasurer. They will take over the leadership of the QEC in the Spring semester 2023.



To PhD or not to PhD?

On November 27th, we organized a PhD information event, targeted at students who are currently facing the difficult decision of whether they should apply for a PhD or not. To give more input regarding this question, we invited Prof. Yiwen Chu, with a recent career in academia, Dr. Moritz Kirste, quantum computing team lead at Zurich instruments, and four current PhD students from different labs at ETH.

The event was kicked off by two talks from Yiwen and Moritz, tackling the PhD question from an academic and industrial point of view, respectively. These initial ideas were expanded on during the subsequent panel discussion with the PhD students and a lot of input from the audience. Finally, we served dinner and drinks to enable more individual discussions with our guests.

The talks provided valuable details about different career paths with their up- and downsides, while the current PhD students could contribute their personal motivations and experiences as part of a variety of research groups.



Invited talk by Will Oliver (MIT)

We were honoured to host a talk by William D. Oliver, professor at MIT, on December 5th. The one-hour talk about the directional emission and absorption of photons via waveguide QED was followed by many questions, and an apéro from SV Catering. With more than 100 students and researchers, the talk was well attended, and the discussions sparked by the talk were further continued during the apéro. The SV Catering was only possible with the financial support of the Quantum Center. We also thank the Quantum Center for its support in administrative matters of the organization.



Semester-end Party

On December 15, the Friday of the last weekend of the semester, we are organizing an end-of-semester party, which has become a tradition by now. With over 60 sign-ups, this is a great occasion to celebrate the end of a successful semester together.

Social media and outreach

We intensified our presence on [LinkedIn](#) and [Instagram](#). In the past year we could increase the number of LinkedIn followers from 385 to 1191 and we now have 275 followers on Instagram.

To promote the quantum engineering master's program and to increase international visibility, ETH decided to make a promotional video about the program. We are happy that the QEC was included in the process as we helped gather recordings of seven current and former quantum engineering students who highlighted different aspects of the program.

QEC Hoodies

Like in the previous years, we gifted QEC hoodies to all new quantum engineers on their first day at ETH in September. In addition to the quantum engineers, we extended the offer to everyone from our quantum community at ETH. Everyone could order a hoodie at their own expense. We got so many requests for additional hoodies that we made another order in December. In total, we ordered 187 hoodies in 2023, and we are excited to see that the QEC hoodies are becoming a symbol for being part of the quantum community at ETH.



Study support and mentoring program

We offered a mentoring system again this year, where every new quantum engineer was matched with a student from the second or third year. To encourage the mentors and mentees to meet in person, we distributed coffee vouchers for the HPI bistro that were valid for the first six weeks of the semester.

Additionally, we implemented a unified process to submit exam protocols and course reviews geared specifically towards quantum engineers, which are available on the QEC website.

In order to support students in their interviews for jobs and internships, we are collecting data about the internships and jobs of former quantum engineering students. We are sharing an anonymized report among the quantum engineers, including the distribution of salaries.

Board

We only had minor changes within the board this semester. The board consists of the following ten members:

- Jonathan Knoll, *President*
- Matteo Stefanini, *Vice-president and treasurer*
- Foivos Vouzinas, *Events*
- Elena Acinapura, *Events*
- Chrysander Hagen, *Studies*
- Michael Bruno, *Studies*
- Jan Obermeier, *Quantum Paper Club*
- Noah Tajwar, *IT*
- Giovanni Vio, *PR*
- Dominique Wanningen, *PR*

The board is not only composed of QE students, but also MSc physics and BSc interdisciplinary sciences.

Outlook

We are thankful for all the trust we received during this year, and we are happy and proud that this has been such an active year. We are convinced that Rémi and Alba will do a great job in continuing the activities of the QEC. Together with a new board, they will use their fresh ideas to make the QEC even better. Many new students have shown interest in the other board positions already. The new board will be formed at the beginning of next semester.

The planning for the ETH Quantum Hackathon in 2024 has started already in October and we are happy that both companies from this year as well as new companies confirmed that they want to participate in next year's hackathon. We have also started planning a second edition of the exchange with PushQuantum from LMU and TU Munich, which will take place in the Spring.

We thank the Quantum Center very much for its generous support. Without it, all these events would not have been possible.



Jonathan Knoll

President



Matteo Stefanini

Vice President and Treasurer