Community

News

https://doi.org/10.1515/aot-2021-0005

German QT funding delayed

In June 2020, the German government dedicated €2 billion to quantum technology. It was part of the €60 billion "Zukunftspaket für das Innovationsland Deutschland" (Future package for Germany as a country of innovation), which was an initiative to drive research and education in response of the first part of the COVID19 pandemic.

While the additional funding came as a surprise to the quantum community, the subsequent promise of immediate execution left most experts in disbelief: "The federal government will immediately award the contract to build at least two quantum computers to suitable consortia" said the governmental program in June 2020. Several ministries developed plans to fulfill the governmental promise, but they could not agree on a common path. The Chancellor's Office insisted on a common strategy and set up a council of experts from industry and research to develop a roadmap. Early in January 2021, this roadmap was handed over to the Chancellor's office. It did not lead to an immediate decision, so doubts remained that the funding can be distributed before German federal elections in September 2021.

The "Roadmap Quantencomputing"

"If strong partners from industry, science and education cooperate now, German industry can be both a lead user and a lead provider in 10 years," said Peter Leibinger, CTO of the Trumpf group and one of the two speakers of the expert group, to the German business newspaper Handelsblatt.

While the roadmap refers to the German strength of combining academic and industrial activities, it also states that none of the German players or consortia currently has the ability to develop, build and run a quantum computer.

Accordingly, the expert group advices to establish a German quantum computer ecosystem with several hubs to solve three tasks: (a) build and run a quantum computer, (b) establish a supply chain for software and hardware components needed for quantum computing (QC), and (c) develop applications to fully exploit the potential of the quantum computers. It is considered essential to reduce Germany's backlog in the field of intellectual property (IP). While emphasis is put on the advancement of national resources, European partnerships are not excluded to solve the tasks.

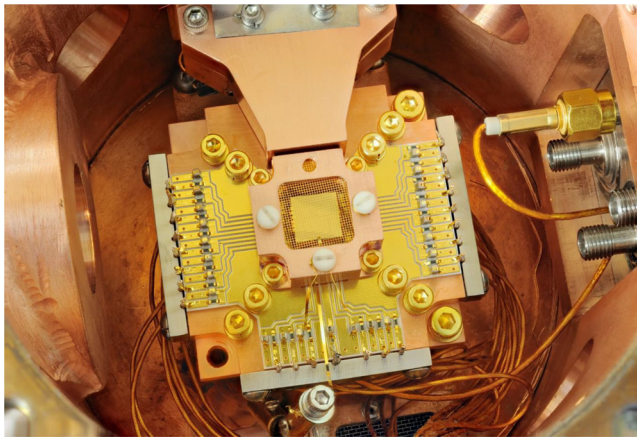
Overall, they have defined three demanding goals: On a short term (i.e. within five years) the QC ecosystem should be established. A milestone would be the completion of a competitive quantum computer with 100 individually addressable qubits which should be scalable to at least 500 qubits. Within 5–10 years, a reasonable quantum advantage should be demonstrated for a relevant application. After 10 years, an error-corrected system should be provided to solve a universal class of problems. In doing so, they aim to achieve broad benefits for business and society.

This is a challenging agenda. And the political agenda in Germany puts a heavy time pressure onto it: on September 26, 2021, Germany will hold federal elections for the Bundestag, which will lead to a new government and a new chancellor. Angela Merkel will not run for it again. This is nothing to worry about, but it will cause a considerable period of negotiations and re-configuration. So, any decision on project should be fixed well before the elections. They have eight months to issue a call for project proposals, collect those proposals and review them, and finally, make funding decisions.

If that works out well, it may leave fears regarding follow-up funding. It is unlikely that the COVID package from 2020 would be repeated soon. Will regular funding be strong enough

to allow sustainable research? Or will they face a "quantum winter" if intermediate goals are achieved and bigger support is needed to cross the "trough of disillusionment", as it may be expected according to the Gartner hype cycle.

The authors of the roadmap strongly believe in the German talent to unite academic research and industrial development. They want to establish a full ecosystem for quantum computers, including education of new talents, nurturing of startups and even a new council, the "Deutsche Quantengemeinschaft" (German Quantum Society) to advice the governmental bodies and to extend the roadmap. That is very ambitious, but in the Roadmap they concede: "The world is not waiting for Germany. We have to start now."



A trapped ion quantum computer is one proposed approach to a large-scale quantum computer. (Credit: Y. Colombe/NIST).

Community

EOS News

Women in photonics

In the present, women in photonics is one of the most talked-about topics in the virtual and real world. According to the studies, a large number of women are enrolling in a university in science, technology, engineering, and mathematics (STEM) subjects and doing good in their field. Sometimes they are doing better than male colleague/students. Nevertheless, unfortunately, the same number of women are not participating in the field of STEM occupations. Still, STEM is considered a male-dominated field, though many women have already proven their excellence and competence in these fields.

Globally, women are underrepresented in many fields, especially in the research, photonics, and optics field; the number is still below standard. According to a recent UNESCO report, only 30% of the world's researchers are women, though this percentage varies from region to region. In my opinion, this situation is worse in South Asia, especially in Bangladesh. Due to society's stereotypical thinking, many women cannot pursue their career as a researcher. Still, many people believe that doctors and teaching are the best professions for women. I am one example of this type of thinking; when I was in 9th grade, my family enforced me to choose science because they wanted to see me as a doctor. In my class, among the other 40 girls, I was the only one who wanted to be a student of science. After completing my 12th grade, when I told my family that "I want to study physics," my family was very upset about my decision on that time. Though I was lucky that, after a few arguments, my family allowed me to study physics and now for sure, they are proud of me. After my marriage, I obtained my Ph.D. degree. I must admit that I was lucky again to finish my Ph.D. journey smoothly because of my supportive husband. But most of the women in Bangladesh are not as privileged as mine. Most often, they have sacrificed their careers and dreams for the sake of the family or society. Luckily, the situation has improved. However, many more activities, improvements and support are needed to build women's career in research or photonics.

UNESCO research data has already proven the systemic barriers that obstruct women scientists from progressing. Despite of gender equality commitments and women's educational attainment, women are still underrepresented in the scientific community. Although the appearance of gender discrimination can be seen in every sector across the globe and highest in Asia, especially in Bangladesh. Many working women in Bangladesh have also experienced sexual harassment and sexual assault by their colleague/boss or unknown person.

There are some countries in Europe where gender equality has been achieved, e.g., Finland, Sweden, and Norway, just to mention a few. Among them, Finland has been called the gender equality pioneer. In 2018, Finland owned the top-ranked Nordic country's crown with a fully closed gender gap in Educational Attainment. Nevertheless, surprisingly, Finland has one of the world's largest gender gaps in college/university degrees in STEM fields. The graduation gap in STEM is increasing with the increasing levels of gender equality. According to the researcher, this situation is called the educational–gender-equality paradox. Even though 47% of Finnish parliament members, including the prime minister, are women, the gender pay gap still appears in Finland. However, countries like Bangladesh yet should follow Finland to improve the gender inequality.

Despites of many barriers, and many difficulties (like family, parenting, inadequate support at home, lack of opportunity networks, etc.), women are still moving forward. Countless women have made tremendous contributions to science and other fields through their hard work and integrity. Though the world has already started recognizing women's talent and power, unfortunately, many women did not get recognition in their lifetimes.

Recently, many international organizations have already come up with excellent opportunities to support women scientists in the various stages of their career growth and activities. For example, in 2015, the European Optical Society (EOS) launched the international LIGHT2015 Young Women in Photonics award to honour a young female scientist who has made outstanding contributions to photonics. Prof. Nathalie Vermeulen, Brussels Photonics (B-PHOT), Vrije Universiteit Brussel, and Prof. and Dir. Laura Na Liu, Physics Institute, University of Stuttgart, won that award jointly. This was followed by the Early Career Women in Photonics Award in 2016. This year, the award went to Dr. Camille-Sophie Brès, École Polytechnique Fédérale de Lausanne, EPFL, Institute of Electrical Engineering. In continuity, in 2021, EOS is going to again present the award, at the Award Ceremony of CLEO/EUROPE-EQEC 2021, during 20–24 June 2021, in Munich,

Germany. Application process is open on the EOS website: https://www.europeanoptics.org/pages/distinctions/awards/early-career-women.html

I believe that we (men and women) can make a better world together. For a better world, gender discrimination should be reduced to zero and women's participation in STEM and the research field should be increased. Globally, women need more support, encouragement, and recognition.

Mousumi Chakraborty
PhD in Photonics
E-mail: mousumi@europeanoptics.org

About the Author

The Author, Mousumi Chakraborty, has a PhD in Photonics from the University of Eastern Finland. Originally from Bangladesh, she now resides in Joensuu, Finland. Mousumi recently joined the EOS office for internship and is involved with the Women in Photonics Initiative of EOS.

EOSAM 2021 moves to Rome

The European Optical Society (see www.europeanoptics.org) was founded in 1991 on the initiative of national learned optical societies from all over Europe, together with the European Physical Society. Over the years, EOS has developed its activities to represent and serve the diversity of photonics in Europe. It focuses on strengthening the cooperation and exchanges between its members. Its major conference "European Optical Society Annual Meeting, EOSAM" lies at the center of this strategy. EOSAM is a major international scientific conference covering aspects of optics and photonics. It is attended by top researchers, key leaders, students and industry experts. It provides a platform to bring forth new research results, the state of the art, and bridging the gap between research, education, and industry.

To better fit into the European Photonics landscape, EOSAM is now held yearly and moves around Europe. It spotlights the local national optical society and gives the attendees the opportunity for visiting some of the greatest cities with strong optics research laboratories and companies. EOSAM was held in France, Scotland, Germany, the Netherlands and Portugal; in 2021, EOSAM moves to Italy. It will be held on Sept 13th–17th in the premises of the University of Rome, Engineering Faculty. Concita Sibilia and Alessandro Belardini, from the Universita di Roma La Sapienza and SIOF members, are the local organizing chairs, with Sapienza Staff of Roberto Li Voti, Marco Centini and Maria Cristina Larciprete.

In case of any sanitary or travel restrictions, the organizers will modify the event into online format. Submission opens in February 2021. All accepted submissions will be presented in front the right audience even if the event would be changed to online form.

Several topical meetings are once again part of the EOSAM 2021, to mention a few:

- Silicon Photonics and Guided-Wave Optics
- Optical System Design, Tolerancing, and Manufacturing
- Bio-Medical Optics
- Resonant Nanophotonics
- Optical Materials: crystals, thin films, organic molecules and polymers, syntheses, characterization and devices
- Thermal radiation and energy management
- Optics at Nanoscale (ONS)
- Waves in Complex Photonics Media
- Optofluidics
- Optical Microsystems (OMS)
- Computational, Adaptive and Freeform Optics
- Nonlinear and Quantum Optics
- Ultrafast Optical Technologies and Applications

For more information, updates, and news, please visit: www.eosam2021.org.

EOSAM2021 will be held on Sept 13th–17th in the premises of the University of Rome, Engineering Faculty.

Community

Conference Calendar

The Calendar has been reviewed on 1st February. Due to further regulations in response to the worldwide pandemic, dates or locations may vary from this list.

Nevertheless, the pandemic may offer new opportunities as well. Please visit the website of a conference you missed. Some offer on-demand viewing of the meeting. And most often, it is for free!

2021
February
SPIE Medical Imaging
Digital Forum
15–19 February 2021
www.spie.org/mi

SPIE Advanced Lithography
Digital Forum
22–26 February 2021
www.spie.org/al

March
SPIE Photonics West
Digital Forum
6–11 March 2021
www.spie.org/pw

SPIE AR | VR | MR
Digital Forum
28–30 March 2021
https://spie.org/x124250.xml

April
OSA Biophotonics Congress
Digital Forum
12–16 April 2021
www.osa.org/en-us/meetings/osa_meetings/osa_biophotonics_congress/

SPIE Defense + Commercial Sensing
Orlando, FL, USA
11–15 April 2021
www.spie.org/dcs

SPIE Optics + Optoelectronics
Online Forum
19–22 April 2021
www.spie.org/oo

UKP Workshop
Digital Forum
21–22 April 2020
www.ultrakurzpulslaser.de

May
CLEO 2021
San Jose, CA, USA
Hybrid event
9–14 May 2021
www.cleoconference.org

June
Optical Fiber communication
San Francisco, CA, USA
Hybrid event
6–10 June 2021
www.ofcconference.org

World of Photonics Congress
Munich, Germany
20–24 June 2021
www.photonics-congress.com/en/

SPIE Conferences @WoP Congress
Biomedical Optics
Digital Optical Technologies
Optical Metrology
Munich, Germany
20–24 June 2021
https://spie.org/conferences-and-exhibitions

OSA Optical Design and Fabrication Congress
Providence, Rhode Island, USA
27 June–1 July 2021
www.osa.org/en-us/meetings/osa_meetings/optical_design_and_fabrication/

September
EOS Annual Meeting
Paris, France
13–17 September 2021
www.europeanoptics.org/events/eos/eosam2021.html

DGaO Tagung
Bremen, Germany

21–23 September 2021
www.dgao.de

October
VISION
Stuttgart, Germany
5–7 October 2021
www.messe-stuttgart.de/vision/

27th International Semiconductor Laser Conference (ISLC)
Potsdam, Germany
10–14 October 2021
www.islc2021.org/home

SPIE Optifab
Rochester, NY, USA
18–21 October 2021
https://spie.org/x125984.xml

2022
Optical Fiber communication
San Diego, CA, USA
6–10 March 2022
www.ofcconference.org

AKL'22
Aachen, Germany
4–6 May 2022
www.lasercongress.org

CLEO
San Jose, CA, USA
15–20 May 2022
www.cleoconference.org

DGaO Tagung
Gent, Belgium
7–10 June 2022
www.dgao.de

LASYS
Stuttgart, Germany
21–23 June 2022
www.messe-stuttgart.de/lasys/