

Quantum Technologies in Space – Working Group meeting Report

Organization

The meeting was organized at ZEISS Forum in Oberkochen (Germany) within the *European Quantum Technology Community (EQTC) meeting* held on April 18th and 19th, 2018. The local organization was chaired by Tommaso Calarco and Max Riedel. Further information about the EQTC meeting can be found at <https://www.zeiss.com/corporate/int/innovation-and-technology/zeiss-symposium-optics-in-the-quantum-world.html>.

General information

The aim of the Working Group meeting was to define the priorities in the *Quantum Technologies in Space (QTSpace)* in view of FP9 and beyond. Thus, the meeting inquired together with the scientific community, the space agencies and the industry which the inputs to give to the European Community (EC). The expected output of the meeting is a Strategic Report addressed to the EC to be used for the definition of future research on quantum technologies.

Delegate statistics

The meeting was a parallel session out of six, and was attended by more than 30 persons who registered for the event and signed the attendance sheet. It was one of the most successful sessions.

Preparation for the meeting

The meeting had a preliminary work consisting in collecting the inputs from the scientific and industrial community. Such inputs were used to construct the basis of the Strategic Report, which is the expected output of the meeting. The Chair of the Action invited to send inputs and comments on the two arguments of the session (*Quantum Science in Space* and *Quantum Technologies for Space Applications*) in the following form:

1. Quantum Science in Space
 - a. Scientific goal
 - b. Why it is important?
 - c. Why in space?
 - d. What is needed to reach the goal?
 - e. Timeline (with a 3-year horizon, and a 10-year horizon)
 - f. How much it costs?

2. Quantum Technologies for Space Applications
 - a. Which technology, for which application?
 - b. Advantage over standard technology
 - c. What is needed to implement it?
 - d. Timeline (with a 3-year horizon, and a 10-year horizon)
 - e. How much it costs?

Structure of the QTSpace session on April 19th

The session *Quantum Technologies in Space* of the EQTC meeting was coordinated and chaired by Angelo Bassi. The structure of the meeting was the following:

1. Introduction by Angelo Bassi as Chair of the Action.
2. Two short presentations by
 - a. Mauro Paternostro representing the scientific community.
 - b. Jose Gavira representing ESA.
3. Discussion Panel.
4. Summary and conclusions.

The minutes of the meeting were taken by Matteo Carlesso. Figure 1 shows part of the session auditorium.

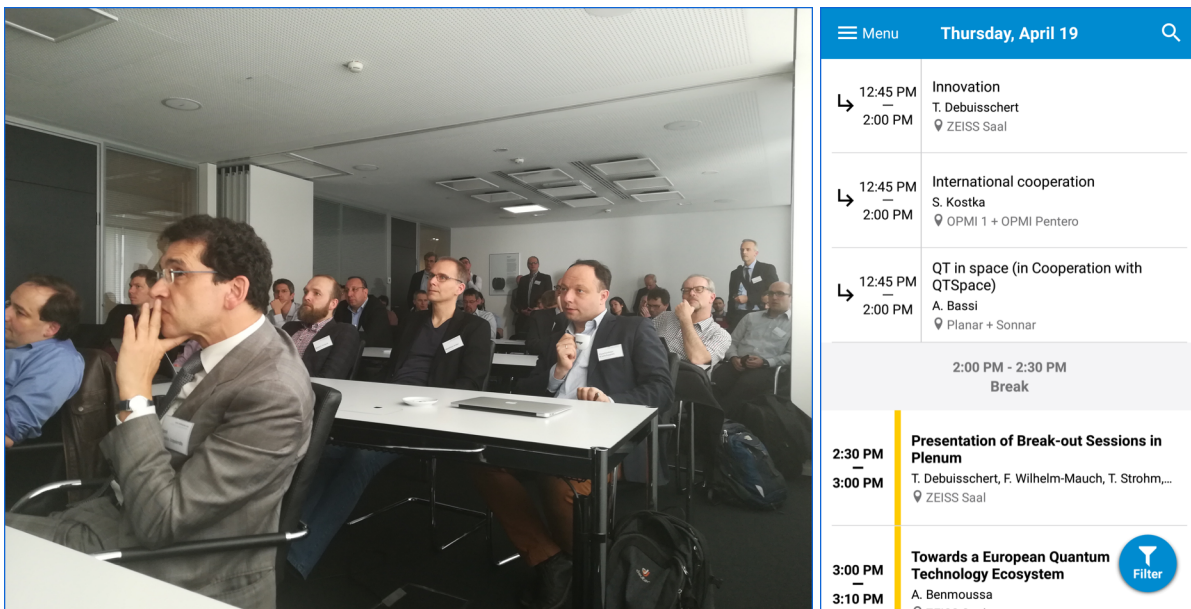


Figure 1: Right Panel: part of the *Quantum Technology in Space* session auditorium.
Left panel: Screenshot of the ZEISS app with part of the EQTC meeting program.

Discussion Panel

The discussion panel focused in two topics: 1) *Quantum Science in Space* and 2) *Quantum Technologies for Space Applications*. The structure of the discussion for both the topics was:

- a) Brief introduction of the topic by Angelo Bassi
- b) Brief description of the subtopics by the representatives of the field.
- c) Open discussion on the single subtopics with questions from the audience and answers by the representatives.

Summary for the European Quantum Technology Community

After the QTSpace session, a summary of the Discussion Panel was presented to the EQTC, that counted more than 250 participants. The presentation was given by the Chair of the Action and it summarized the QTSpace session, which was one of the 6 parallel session of EQTC meeting. Contrary to the other presentations, this was the only one which inspired questions from the audience. Figure 2 shows part of EQTC auditorium present at the *QTSpace* session summary.



Figure 2: Part of the EQTC auditorium at the QTSpace summary.

Planned Follow-up

It is planned a brief meeting in Munich (Germany) of QTSpace representatives to discuss and prepare the Strategic Report, which is planned to be presented on May 2nd to the EQTC.