

1st Conference and Working Group Meeting Report

Organisation

The Local Organising Committee was chaired by André Xuereb, who also wrote this report. The programme committee consisted of: Mauro Paternostro (chair), Angelo Bassi, Simon Gröblacher, Hendrik Ulbricht, Rainer Kaltenbaek, Yasser Omar, and Christoph Marquardt.

General information

Reproduced *verbatim* from the website: [<https://qtspacemalta.sciencesconf.org/>].

Introduction

Several efforts directly refer to quantum science and technology (QT) in space, either in the form of proposals or actual space missions. It is timely and crucial to bring together technically and scientifically diverse people, as well as space agencies and funding bodies, to explore the next steps towards successful space missions on this topic.

During the meeting we will evaluate the status quo of QT in space, assessing all aspects relevant for fundamental concepts, applications, proof-of-principle experiments and implementations which are the four pillars defined as working groups (WGs) of the COST Action QTSpace. The community will gather insight into the possibilities for near-future missions.

We aim to transfer knowledge and mature expertise coming from prominent scientists interested in the fields of quantum science/technology and space, which we aim to merge further. We plan to make available to everyone the gathered information in the form of a contemporary proceedings publication.

The Malta meeting will be the first meeting of this Action. It will set the scene for the forthcoming four years, by identifying questions that the Action aims to address. It will be

organised along the lines of the four main themes addressed by the action: Fundamental studies, Applications, Proof-of-Principle Experiments, and Implementation. Sessions that tie these themes together will also serve to provide a bird's eye view of the questions that are to be addressed by this network.

About the meeting

This conference will be organised along the four main lines (working groups) of this COST Action, along with sessions that bring the entire network together.

- The MC meeting on Monday will be an administrative meeting for the members of the management committee of the action.
- WG1 Fundamentals will identify fundamental science questions to be addressed as well as the scientific and technical requirements to perform related experimental tests in space.
- WG2 Applications will identify possible applications of quantum technology (QT) in space, define the scientific and technical requirements.
- WG3 Proof-of-principle experiments aims to identify of the principles that should be demonstrated on ground, and coordination about the implementation of the respective experiments; and share knowledge about available technologies and experimental techniques for performing experiments in space-relevant settings.
- WG4 Implementations aims to transfer concrete scientific plans for missions into ready proposals.
- A workshop session will take place on Thursday to bring everyone together and discuss how the aims of the four working groups can be fulfilled within the scope of this COST Action.
- Plenary sessions, targeting the entire community, serve to bookend the conference.

Meeting summary

The meeting took place between Sunday, 26th March, and Friday, 31st March, including an arrival and a departure day.

Delegate statistics

The meeting attracted 80 registered delegates, of whom 100% attended for at least one day. The number of signatures, as per the official COST form, was 76, 76, 74, and 69 (respectively) on the four days from Monday to Thursday. These numbers exclude two delegates who attended the event but did not sign.

Structure

The advertised programme was adhered to during the meeting. The number of presentations and other sessions was as follows:

- 1 MC meeting, attended by 18 out of 25 countries
- 17 talks by invited speakers, all male
- 15 talks by contributed speakers, of which 9 were ECIs (including 1 female)
- 1 remote talk by Tommaso Calarco
- 16 posters, displayed from Monday morning to Thursday afternoon
- 4 sessions of guided discussions, one per WG
- 5 sessions of roadmap discussions

Prizes

The European Physical Journal on Quantum Technology sponsored three prizes in the form of Springer book tokens worth €150 each.

- Two poster prizes were awarded, both to ECIs: Kjetil Børkje (M) and André Wenzlawski (M); the judges were James Bateman, Sandro Donadi, and Siddarth Joshi
- One contributed talk prize was awarded, to an ECI: Aline Dinkelaker (F); the judges were Géza Tóth, David Vitali, and Sabrina Maniscalco

Social programme

The conference featured a social programme before and after the main sessions:

- Tour of Fort St Elmo, the conference venue, on Monday morning
- Tour of Valletta on Thursday evening
- Conference dinner, attended by 53 delegates and co-sponsored by the Maltese Ministry for Finance)

Planned follow-up

The plan is to publish the summary of the roadmap discussions in the form of a peer-reviewed article, or collection of articles, or in some other manner such that it is freely accessible by the public.

Conference photo

