

COST Action CA16218

Action Title: NANOSCALE COHERENT HYBRID DEVICES FOR SUPERCONDUCTING QUANTUM TECHNOLOGIES

Minutes Management Committee Final Meeting GP5 7th of April 2022 (Remote meeting - via Zoom)

1. Welcome to participants

The meeting starts at 10h00. The Chair of the Action, Hermann Suderow opens the meeting and welcomes all participants, including the Project Scientific Officer Dr. Mónica Cabero. This is the final MC meeting of the action, which ends on the 16th of April.

2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum

35 participants were present in the meeting. More than 2/3 of the country representatives (21 countries out of 28) of the Action attended this 11th Management Committee meeting. Therefore, the quorum was achieved. The decisions taken during the meeting and the issues discussed are reported in these minutes and will be sent to all MC members for approval.

3. Adoption of agenda

The meeting participants agreed to adopt the meeting agenda sent by the Chair of the Action via email on the 5th of April, 2022.

There were no pending issues from last meeting.

4. Update from the Action Chair and Grant Holder

a) Status of Action.

The chair of the action starts making a review of the action. It started on the 18th of October 2017 and was extended until the 16th of April 2022 (initial end date was 17th of October 2021). It had 5 Grant Periods.

Then, he shows some pictures of the initial kick-off meeting in Brussels and of one of the last meetings in Paris (October 2021). He also makes a review of the Action focus, working groups, research coordination objectives and capacity building objectives as well as of the project deliverables.

The chair of the Action also makes a review of all meetings, conferences and schools that have been organized along the project:

- In GP1, the first workshop of the action “COHERENT SUPERCONDUCTING HYBRIDS AND RELATED MATERIALS”, took place in Les Arcs (France) in March 2018. It was organized by Dimitri Roditchev and Brigitte Leridon. Jointly with this workshop, the second MC meeting was undertaken.
- In GP2, 3 events were organized: First a School on quantum materials and workshop on vortex

behavior in unconventional superconductors was organized by the Chair of the Action in Braga (Portugal) in October, 2018. Second, a meeting “Probing Coherent Superconducting Hybrids at the Nanoscale” was organised in February 2019 in Eilat (Israel) by Yonathan Anahory and Beena Kalisky. Jointly with this workshop, the third MC meeting was undertaken. Finally, a joint meeting together with the COST Action MolSpin “Superconductivity meets Molecular Spins” was organised in Lisbon in March 2019.

- In GP3 the “International Workshop on Vortex Matter 2019” was organized by Milorad Milosevic in Antwerp (Belgium) in May 2019. During this GP, another meeting was planned to take place in Tatry (Slovakia) in March 2020. However, the meeting had to be cancelled in the last minute due to the COVID-19 pandemics. This meeting was postponed and finally took place in a hybrid mode in GP4.
- GP4 started at the beginning of the pandemics. Therefore, virtual communication became a relevant part of the action networking scientific activities and numerous online activities were organized during this GP. For example, a half-day fully online mini workshop entitled “Towards strong correlations in van der Waals heterostructures and 2D materials” was organized in March 2021 by the chair of the Action, Hermann Suderow together with Yonathan Anahory and Milorad Milosevic, a three-day Young Investigator’s online workshop “Nanoengineered Superconductors – NES21” was organised in May 2021 by Wolfgang Lang together with Oleksandr Dobrovolskiy, Dieter Kölle and Alina Marinela Ionescu and a three day online conference on emergent topological superconductivity was organised in June 2021 by Pertti Hakonen together with Aleksander Zyuzin and Manohar Kumar. Then, as the situation of the pandemic improved, the first hybrid in-person/online meeting on the action, “Superconducting Hybrids @ Extreme” was undertaken in Tatry (Slovakia) in July 2021, taking over the one that was cancelled in GP3. It was organised by Pavols Szabo, together with Joseph Kazmarcik, Peter Samuely, Tomas Samuely and Zuzana Pribulova. The second hybrid conference, entitled “Low dimensional superconducting hybrids for novel quantum functionalities” took place in Paris (France) in October 2021 and was organised by Javier Villegas, Dimitri Roditchev and Aleksandr Bouzdine. In both cases, beyond the in-person participants (around 60-70), the conferences were streamed online, with numerous scientists participating actively in the discussions from outside the meeting place. Nevertheless, these two meetings were important to resume in-person interactions and discussions. From April 2020 onwards, all MC meetings were held online.
- Finally, in GP5 two additional meetings were organized: The first one took place in January 2022 “Young investigators online workshop on unconventional superconductivity in heavy fermions” and was a fully online meeting with more than 40 speakers and 110 participants from all over the world (Especially the EU, China and Japan). This one was organized together with Jeroen Custers, Jean Pascal Brison and the Virtual Networking Support Manager. The second one “Quantum materials and devices at the nanoscale” took place in March 2022 and was also a hybrid online in-person meeting.

The chair of the Action warmly thanks the organizers of all those meetings, which have significantly contributed to the achievement of all project objectives.

Next to this review, the chair of the Action starts reviewing other activities from the action such as the newsletter with a summary of project activities, publications, etc. that is being distributed regularly, the book for kids “Quantum escape” that has just been published (for now only in French but will be translated to

other languages soon) and can be acquired through amazon or other bookstores, or the interviews that were made by a professional journalist to 8 NanocoHybri participants, addressing in particular the large public and very young students.

Finally, the chair of the Action makes a review of the articles published that acknowledge the action. 312 can be found in google scholar by searching for 16218 or nanocoHybri in the acknowledgements, out of which 48 in nature group journals and 27 in APS journals. Even considering that google scholar is not a complete indexing service and certainly leads to an overestimation, these numbers are truly large and are valued very positively by the MC.

b) Short Term Scientific Missions (STSM): review of completed STSMs. In total 49 STSMs have taken place (spending around 20% of the total budget) evidencing that the community has very successfully acknowledged the availability of these instruments. Also 7 VMGs have been undertaken, proving that these instruments have been very efficient to maintain collaborations during the pandemics and open a new possibility for future collaborations.

c) Open Access Publications: During the pandemics, in GP4, the Open Access fees for two joint publications were paid. No additional fees were paid afterwards as, considering the budget available, priority was given to supporting participants to attend meeting, virtual networking activities and STSMs.

d) Action budget status. Information and planning of forthcoming events.

The total budget available for scientific expenditure has been slightly above 500K€. The chair informs that the budget was approximately distributed as follows:

- Meetings, schools (70%): 350 987 €
- STSM (19%): 95 354 €
- Dissemination (6%): 29 367 €
- VNT Grants (3.4%): 17 000 €
- ITC Grants (<2%): 7 990 €
- Others (zoom, etc., <1%): 491 €

5. Implementation of COST policies on:

a) Promotion of gender balance and Early Career Investigators (ECI)

b) Inclusiveness and Excellence (see below list of Inclusiveness Target Countries)

The project scientific officer takes the word and provides a general overview of COST and some figures related to the NanocoHybri action. The project officer also provides all the transparencies for distribution among MC members. In summary, Dr Mónica Cabero mentions that the overall budget of the action has been higher than the budget given to other actions. The participation of females has been well below the average, for comparison with other Actions in related fields (15,8%). The scientific officer of the Action continues to account for other results of the Action, explaining that the participation of young scientists in all activities of the Action has been truly outstanding (63,4%), well above average. Also, that 36% of the budget has gone to ITC countries, which is considered as not fully reaching the 50% target, but in line to other Actions.

The MC warmly acknowledges the information provided by the scientific officer, also about the new information regarding changes in COST. About the various points, numerous MC members and the chair comment on the obtained number of participation of females and point out that this is a point of great concern and of future improvement, in all activities in which the MC members are involved. Acknowledging all the efforts made during the Action to maintain gender equilibrium, for example in invited speakers and other key positions of the Action, it becomes clear to all MC members that more work needs to be done along this line. On the other hand, MC members also point out that there have been a very low number of invited contributions to meetings of the Action by senior members of the Action. This is seen as a very positive outcome of the Action, which is reflected in the very high number of young participants.

6. Follow-up of MoU objectives: progress report of working groups

The Chair reminded the Action objectives and WGs based on the Memorandum of Understanding as well as the management structure. A scientific report will need to be prepared in the forthcoming weeks to summarize the achievement of these. The chair will take care of this and request support if needed to MC members.

7. Scientific planning

A CIG proposal was prepared and submitted in the last closure date (7th of February). If funded, this proposal will provide up to 125.000€ and one additional year for undertaking innovation oriented activities coming up from our action. In previous meetings all agree that such a proposal will be timely and was very well received.

Finally, he also informs about the new COST proposal submitted (Superqmap). In both cases, results can be expected by the end of May and, if funded, could start in November 2022. Information will be provided in due course.

All MC members inform each other about further information on their networking activities, consisting of conferences and meetings organized by learned societies and by participation in world-wide international committees.

8. AOB

No further aspects.

9. Location and date of next meeting

As there will be no additional meetings related to the Action, a “Tour de table” was done, allowing all present MC members to provide their view on the performance and outcomes of the action.

10. Closing

The MC Chair thanked the participation of all the MC members and closed the MC meeting at around 12h00.

[Meeting ends]