Science meets industry:
Ultra-low vibration cryogenic platforms

Munich, 10. & 11. July 2017

„Science meets industry: Ultra-low vibration cryogenic platforms “

10. and 11. July 2017

Location:

Bayerische Akademie der Wissenschaften
Alfons-Goppel-Straße 11, 80539 München
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Organizing Comittee

Rudolf Gross	Bavarian Academy of Sciences and Humanities, Munich, Germany and Technische Universität München, Munich, Germany
Hans Huebl	Bavarian Academy of Sciences and Humanities
Khaled Karrai	attocube Systems GmbH

Programm Comittee

Markus Aspelmeyer	University of Vienna, Vienna, Austria
Rudolf Gross	Bavarian Academy of Sciences and Humanities, Munich, Germany and Technische Universität München, Munich, Germany
Hans Huebl	Bavarian Academy of Sciences and Humanities
Khaled Karrai	attocube Systems GmbH

Administration and Organization

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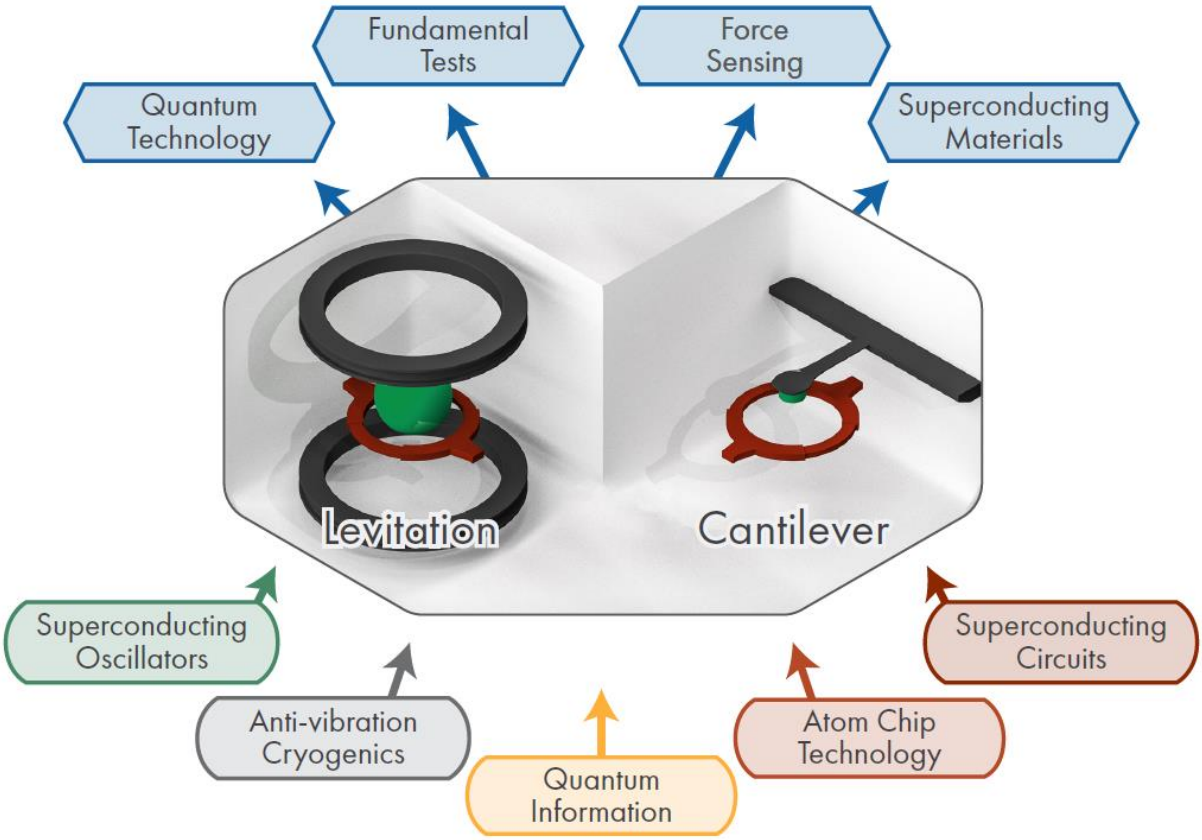
Maria Botta	Bavarian Academy of Sciences and Humanities
Philip Schmidt	Bavarian Academy of Sciences and Humanities
Daniel Schwienbacher	Bavarian Academy of Sciences and Humanities

The workshop is supported by



scientific members

industry experts

Scope of the workshop

The workshop will bring theorists, experimentalists and Industry actors to work out together the required attributes of novel future ultra-low vibration cryogenic platforms for experiments in macroscopic quantum physics and for quantum enabled sensing. The fundamental motivation to come up with designs for such platforms will be to perform experiments exploiting magnetic coupling between superconducting quantum circuits and superconducting mechanical resonators – both levitated and suspended – to enter a hitherto inaccessible parameter regime of both unprecedented force sensitivity and full quantum control of massive, macroscopic objects. The intended ultimate goal is to enable quantum experiments of otherwise unachievable coherence times and masses, which has immediate implications for testing fundamental physical questions, for performing hybrid quantum information processing and, on the applied side, for ultrasensitive force sensing applications.
The aim of the Workshop will be to map out the required attributes for low-vibration cryogenics.
During day one, speakers will provide an overview of their work and scientific or technological visions that benefits from low vibration cryogenics.
During the morning of day 2 in the workshop, we will establish together a set of attributes and specifications for low vibration cryogenic platforms that will be essential to achieve various visions.

- Low temperatures, how low is low?
- why vibration isolation? How low is low vibration ?, what frequency range ?
- Vacuum requirements? How good a vacuum is required
- Measurement methodology for the required physics ? Optics ? Squid? Microwave resonators ? other
- Robust measurements to characterize the required vibration level?

Program

Monday (10th July)

11:30	Registration
12:00 12:10 12:20	Workshop opening Definition of the goals of the Workshop
12:30 12:40 12:50 13:00 13:10	Oriol Romero-Isart (IQOQI)
13:20 13:30 13:40 13:50	Lukas Novotny (ETH Zürich)
14:00 14:10 14:20	Coffee break
14:30 14:40 14:50 15:00	Andreas Reiserer (MPQ)
15:10 15:20 15:30 15:40	Naren Hoovingkatte (Leiden Cryogenics)
15:50 16:00 16:10 16:20	Gerhard Kirchmair (IQOQI)
16:30 16:40 16:50	Coffee break
17:00 17:10 17:20 17:30	Christian Ast (Max Planck Stuttgart)
17:40 17:50 18:00 18:10	Wulf Wulfhekel (KIT)
18:20 19:20	End
19:30	Dinner @ Biermuseum München

Tuesday (11th July)

08:30 08:40 08:50 09:00	Jonas Schmöle (UniVie)
09:10 09:20 09:30 09:40	Khaled Karrai (attocube)
09:50 10:00	Coffee break
10:10 10:20 10:30 10:40 10:50 11:00 11:10 11:20	Discussion: Ultra-low vibration platforms (Khaled Karrai, Rudolf Gross, Hans Huebl) Closing remarks
11:30 11:40 11:50	Walk across the garden to attocube
12:00 12:10 12:20 12:30 12:40 12:50	Visit attocube (2-3 visitor groups)
13:00 13:10 13:20 13:30	Lunch @ attocube
13:40 13:50 14:00 14:10 14:20	Transfer attocube --> WMI (public transport)
14:30 14:40 14:50 15:00 15:10 15:20 15:30 15:40 **15:50**	Visit WMI (2-3 visitor groups)
16:00	Taxis to the airport

List of Confirmed Participants (as of 5th July 2017)

Aspelmeyer	Markus	University of Vienna
Ast	Christian	Max Planck Institut Stuttgart
Deppe	Frank	Walther-Meissner-Institut
Fedorov	Kirill	Walther-Meissner-Institut
Gross	Rudolf	Walther-Meissner-Institut
Hofer	Joachim	University of Vienna
Hoovingkatte	Naren	Leiden Cryogenics
Huebl	Hans	Walther-Meissner-Institut
Juan	Mathieu	University of Innsbruck
Karrai	Khaled	attocube
Kirchmayr	Gerhard	University of Innsbruck
Kleiner	Reinhold	Universität Tübingen
Kölle	Dieter	Universität Tübingen
Laut	Sergi	University of Barcelona
Mach	Rosa	University of Barcelona
Marx	Achim	Walther-Meissner-Institut
Novotny	Lukas	ETH Zürich
Reisinger	Christian	MPQ
Romeo-Isart	Oriol	University of Innsbruck
Rosenzweig	Lisa	Walther-Meissner-Institut
Rudolf	Matthias	Universität Tübingen
Sanchez	Alvar	University of Barcelona
Schmidt	Philip	Walther-Meissner-Institut
Schmöle	Jonas	University of Vienna
Schneider	Christian	University of Innsbruck
Schwienbacher	Daniel	Walther-Meissner-Institut
Slater	Josh	University of Vienna
Trupke	Michael	University of Vienna
Uhl	Kevin	Universität Tübingen
Uhlig	Kurt	Walther-Meissner-Institut
Utschick	Christoph	Walther-Meissner-Institut
Wachter	Georg	University of Vienna
Wietek	Witlef	Chalmers
Wirtisch	Daniel	University of Vienna
Wulfhekel	Wulf	KIT
Wulschner	Friedrich	University of Vienna
Ziegler	Timo	Universität Tübingen
Zöpfl	David	University of Innsbruck