

Quantum sensing and fundamental physics with levitated mechanical systems

Report of Contributions

Contribution ID: 1

Type: **not specified**

Microelectromechanics - levitation, detection, control and cooling

Wednesday, 2 August 2023 10:20 (40 minutes)

Presenter: MILLEN, James (King's College London)

Session Classification: Session 5

Contribution ID: 2

Type: **not specified**

Spin-mechanics with levitating diamonds

Wednesday, 2 August 2023 09:40 (40 minutes)

Presenter: PERDRIAT, Maxime (LPENS (Paris))

Session Classification: Session 5

Contribution ID: 3

Type: **not specified**

Control of Levitated Nanoparticles

Monday, 31 July 2023 09:30 (40 minutes)

Presenter: NOVOTNY, Lukas

Session Classification: Session 1

Contribution ID: 4

Type: **not specified**

Two-dimensional quantum strong coupling with a levitated nanosphere

Monday, 31 July 2023 10:10 (40 minutes)

Presenter: MARIN, Francesco (Università degli Studi di Firenze)

Session Classification: Session 1

Contribution ID: 5

Type: **not specified**

Generation of entanglement from mechanical rotations

Monday, 31 July 2023 11:20 (40 minutes)

Presenter: TOROS, Marko (University of Glasgow)

Session Classification: Session 1

Contribution ID: 6

Type: **not specified**

Nanoparticles in Hybrid Potentials

Monday, 31 July 2023 12:00 (40 minutes)

Presenter: MEYER, Nadine (Nanophotonic Systems Laboratory)

Session Classification: Session 1

Contribution ID: 7

Type: **not specified**

Searching for new forces at micron scale with optically levitated microspheres

Monday, 31 July 2023 14:30 (40 minutes)

Presenter: GRATTA, Giorgio (Stanford University)

Session Classification: Session 2

Contribution ID: 8

Type: **not specified**

Levitated optomechanical sensors for nuclear and particle physics

Monday, 31 July 2023 15:10 (40 minutes)

Presenter: MOORE, David (Yale)

Session Classification: Session 2

Contribution ID: 9

Type: **not specified**

Quantum neuromorphic approach for efficient sensing of gravity-induced entanglement

Monday, 31 July 2023 16:20 (40 minutes)

Presenter: PATERNOSTRO, Mauro (Queen's University Belfast)

Session Classification: Session 2

Contribution ID: **10**

Type: **not specified**

Welcome

Monday, 31 July 2023 09:10 (20 minutes)

Session Classification: Session 1

Contribution ID: 11

Type: **not specified**

An ultra-high-Q mechanical oscillator in an ion trap

Tuesday, 1 August 2023 09:00 (40 minutes)

Presenter: NORTHUP, Tracy (University of Innsbruck)

Session Classification: Session 3

Contribution ID: 12

Type: **not specified**

Chip-based magnetic levitation of superconducting microparticles

Tuesday, 1 August 2023 09:40 (40 minutes)

Presenter: HIGGINS, Gerard (Institute for Quantum Optics and Quantum Information (IQOQI), Vienna, Austria)

Session Classification: Session 3

Contribution ID: 13

Type: **not specified**

Magnetometry with levitated micromagnets

Tuesday, 1 August 2023 10:20 (40 minutes)

Presenter: AHRENS, Felix Klaus (FBK & CNR-IFN)

Session Classification: Session 3

Contribution ID: 14

Type: **not specified**

Free-falling geodesic reference test masses and low frequency gravitational wave observation from space

Tuesday, 1 August 2023 11:30 (40 minutes)

Presenter: WEBER, William Joseph (Università di Trento, Dipartimento di Fisica)

Session Classification: Session 4

Contribution ID: 15

Type: **not specified**

Levitated Optomechanics in Weightlessness

Tuesday, 1 August 2023 12:10 (40 minutes)

Presenter: Dr VOGT, Christian (ZARM, Uni Bremen)

Session Classification: Session 4

Contribution ID: 16

Type: **not specified**

Macroscopic Quantum Superpositions via Dynamics in a Wide Nonharmonic Potential

Tuesday, 1 August 2023 14:30 (40 minutes)

Presenter: ROMERO-ISART, Oriol (IQOQI / U Innsbruck)

Session Classification: Session 4

Contribution ID: 17

Type: **not specified**

Exploring macroscopic quantum mechanics with the levitated optomechanics toolbox

Tuesday, 1 August 2023 15:10 (40 minutes)

Presenter: FEIN, Yaakov (University of Vienna)

Session Classification: Session 4

Contribution ID: 18

Type: **not specified**

Towards on-chip levitated magnetomechanics with a single spin

Wednesday, 2 August 2023 09:00 (40 minutes)

Presenter: SCHAEFER, John DaLi (Harvard University - Lukin Group)

Session Classification: Session 5

Contribution ID: 19

Type: **not specified**

Scanning SQUID-on-tip microscopy of 2D and chiral magnetism

Wednesday, 2 August 2023 11:30 (40 minutes)

Presenter: POGGIO, Martino (University of Basel, Department of Physics)

Session Classification: Session 5

Contribution ID: 20

Type: **not specified**

Ellipsoidal paramagnetic particle with gyro effects

Wednesday, 2 August 2023 12:10 (40 minutes)

Presenter: CEBERS, Andrejs (University of Latvia)

Session Classification: Session 5

Contribution ID: 21

Type: **not specified**

Superconducting levitation of micromagnetic cylinders

Wednesday, 2 August 2023 14:30 (40 minutes)

Presenter: TIMBERLAKE, Chris (University of Southampton)

Session Classification: Session 6

Contribution ID: 22

Type: **not specified**

Defying Gravity: Measuring attoNewton Gravity with a Magnetic Zeppelin

Wednesday, 2 August 2023 15:10 (40 minutes)

Presenter: FUCHS, Tim (Leiden University)

Session Classification: Session 6

Contribution ID: 23

Type: **not specified**

Quantum sensing in microgravity

Wednesday, 2 August 2023 16:20 (40 minutes)

Presenter: HEIDT, Alexander (LEMAQUME - Einstein-Elevator at Leibniz Univerisity of Hannover
- Institut für Transport- und Automatisierungstechnik & Institut für Quantenoptik)

Session Classification: Session 6

Contribution ID: 24

Type: **not specified**

Free-fall experiment of a mesoscopic magnet and its magnetically levitated launcher

Wednesday, 2 August 2023 17:00 (40 minutes)

Presenter: JI, Wei (Johannes Gutenberg University Mainz)

Session Classification: Session 6

Contribution ID: 25

Type: **not specified**

Magnetic levitation - cooling, spinning and overcoming eddy damping

Thursday, 3 August 2023 09:30 (40 minutes)

Presenter: Prof. TWAMLEY, Jason (Okinawa Institute of Science and Technology Graduate University)

Session Classification: Session 7

Contribution ID: 26

Type: **not specified**

Spin-controlled interference of quantum rotors

Thursday, 3 August 2023 10:10 (40 minutes)

Presenter: STICKLER, Benjamin (Uni Duisburg-Essen)

Session Classification: Session 7

Contribution ID: 27

Type: **not specified**

Translational and librational cooling by elliptic coherent scattering

Thursday, 3 August 2023 11:20 (40 minutes)

Presenter: PONTIN, Antonio (University College London)

Session Classification: Session 7

Contribution ID: 28

Type: **not specified**

Testing collapse models and gravity with levitated optomechanics

Thursday, 3 August 2023 12:00 (40 minutes)

Presenter: CARLESSO, Matteo (University of Trieste)

Session Classification: Session 7

Contribution ID: 29

Type: **not specified**

Aspects of low-energy tests of quantum gravity

Thursday, 3 August 2023 14:00 (40 minutes)

Presenter: PLENIO, Martin Bodo (Ulm University)

Session Classification: Session 8

Contribution ID: 30

Type: **not specified**

Realization of a complete Stern-Gerlach interferometer: Towards a test of quantum gravity

Thursday, 3 August 2023 14:40 (40 minutes)

Presenter: FOLMAN, Ron (Ben-Gurion University)

Session Classification: Session 8

Contribution ID: **31**

Type: **not specified**

Concluding remarks

Thursday, 3 August 2023 15:20 (15 minutes)

Session Classification: Session 8