

# Program

## Sunday, 28 July 2019

17:00 – 21:00    Registration

18:00            *BUFFET SUPPER and get-together*

## Monday, 29 July 2019

08:00            *BREAKFAST*

09:00 – 09:10    Scientific organizers    **Welcome words**

09:10 – 09:55    Peter Barker            **An ultra-narrow linewidth levitated nano-oscillator for testing dissipative wavefunction collapse.**

09:55 – 10:40    Tongcang Li            **Fast rotation and nonequilibrium thermodynamics of a levitated nanoparticle**

10:40 – 11:00    *COFFEE BREAK*

11:00 – 11:45    Martin Frimmer        **The Heisenberg limit of detection in optical levitation**

11:45 – 12:30    David Moore            **Precision searches for new physics using optically levitated sensors**

12:30 – 12:40    **Conference Photo** (in the front of the lecture hall)

12:40            *LUNCH*

# Program

**Monday, 29 July 2019**

|               |                                   |  |
|---------------|-----------------------------------|--|
| 14:00 – 14:45 | Benjamin Stickler                 | <b>Macroscopic quantum superposition tests with rotating nanoparticles</b>                                   |
| 14:45 – 15:30 | Muddassar Rashid                  | <b>Levitated systems: Towards ultra-weak force sensing</b>   |
| 15:30 – 16:00 | <i>COFFEE BREAK</i>               |  |
| 16:00 – 16:45 | Tracy E. Northup                  | <b>Towards ion-assisted levitated optomechanics: Cooling and manipulation of a nanosphere in a Paul trap</b> |
| 16:45-17:15   | Talitha Weiss                     | <b>Quantum motional state tomography using quartic potentials and neural networks</b>                        |
| 17:15 – 18:00 | <b>Poster flash presentations</b> |  |
| 18:15         | <i>DINNER</i>                     |  |
| 19:30         | <b>Poster session</b>             |  |

# Program

Tuesday, 30 July 2019

|               |                     |  |
|---------------|---------------------|--|
| 08:00         | <i>BREAKFAST</i>    |  |
| 09:00 – 09:45 | Markus Aspelmeyer   | <b>Levitated optomechanics in the strong cooperativity regime</b>                                |
| 09:45 – 10:30 | Thomas LeBrun       | <b>Optical microcavities for precision measurement and levitated optomechanics</b>               |
| 10:30 – 11:00 | <i>COFFEE BREAK</i> |  |
| 11:00 – 11:45 | James Millen        | <b>New approaches to the control of levitated nanoparticles</b>                                  |
| 11:45 – 12:30 | Nadine Meyer        | <b>Resolved sideband cooling of levitated nanoparticles in a high finesse cavity</b>             |
| 12:30         | <i>LUNCH</i>        |  |
| 14:00 – 14:45 | Klemens Hammerer    | <b>Object-observer entanglement and back-action evasion in continuous positions measurements</b> |
| 14:45 – 15:30 | Yoshi Arita         | <b>Rotational levitated optomechanics</b>  |

# Program

**Tuesday, 30 July 2019**

15:30 – 16:00    *COFFEE BREAK*

16:00 – 16:45    Oriol Romero-Isart    **Strong quantum acousto-mechanics  
with a micromagnet**

16:45 – 17:15    Loïc Rondin    **Fast equilibration in the underdamped  
regime**

17:15 – 18:00    Mishkatul  
Bhattacharya    **An optical tweezer phonon laser**

18:00 – 18:15    Stefan Jorda    **About the Wilhelm and Else Heraeus  
Foundation**

18:30            *DINNER*

19:30            **Poster session**

# Program

Wednesday, 31 July 2019

|               |  |   |
|---------------|--|---|
| 08:00         | <i>BREAKFAST</i>   |   |
| 09:00 – 09:30 | Rainer Kaltenbaek  | <b>Tests of quantum physics and the case for space</b>  |
| 09:30 – 10:00 | Dennis Rätzel  | <b>Quantum-optomechanical systems as sensors for oscillating gravitational fields</b>             |
| 10:00 – 10:30 | Stefan Nimmrichter   | <b>Classical channel gravity in the Newtonian limit</b>   |
| 10:30 – 11:00 | <i>COFFEE BREAK</i>  |   |
| 11:00 – 11:45 | Andrew Geraci  | <b>Gravitational-wave detection and precision sensing with optically-levitated nano-particles</b> |
| 11:45 – 12:30 | Gabriel Hétet  | <b>Spin-Mechanics with particles levitating in a Paul trap</b>                                    |
| 12:30         | <i>LUNCH</i>   |   |
| 14:00         | <b>Excursion</b>   |   |
| 18:00         | <i>HERAEUS DINNER</i><br><i>(social event with cold &amp; warm buffet with complimentary drinks)</i> |   |

# Program

Thursday, 01 August 2019

|               |                       |  |
|---------------|-----------------------|--|
| 08:00         | <i>BREAKFAST</i>      |  |
| 09:00 – 09:45 | Nikolai Kiesel        | <b>Thermodynamics with levitated nanoparticles</b>   |
| 09:45 – 10:30 | Mauro Paternostro     | <b>Entropy production in continuously measured quantum systems</b>                               |
| 10:30 – 11:00 | <i>COFFEE BREAK</i>   |  |
| 11:00 – 11:45 | Charles Brown         | <b>Optical, mechanical and thermal properties of superfluid Helium drops levitated in vacuum</b> |
| 11:45– 12:30  | Pavel Zemánek         | <b>Nonlinear dynamics of optically levitated objects</b>   |
| 12:30 – 12:45 | Scientific organizers | <b>Poster awards and closing words</b>   |
| 12:45         | <i>LUNCH</i>          |  |

**End of the seminar and departure**

*NO DINNER for participants leaving on Friday morning*