

Program

Sunday, 13 December 2020

20:00 **Wonder Room**
Socializing

Monday, 14 December 2020

08:40 – 09:00 Axel Pelster **Opening and Welcome**

Session 1: Optical Lattices (Chair: Axel Pelster)

09:00 – 09:45 Monika Aidelsburger **Observing non-ergodicity due to kinetic constraints in tilted Fermi-Hubbard chains**

09:45 – 10:30 Christof Weitenberg **Unsupervised machine learning of topological phase transitions from cold-atom data**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 12:30 **Short Talks I** (11 talks, 7 min each)
(Chair: **Monika Aidelsburger**)
Short Talk Nr. 4 cancelled on short notice

12:30 – 14:00 *LUNCH BREAK*

14:00 – 15:30 **Short Talks II** (11 talks, 7 min each)
(Chair: **Thomas Gasenzer**)
Short Talk Nr. 17 now Mohammad Tayeb Meftah

15:30 – 16:00 *COFFEE BREAK*

16:00 – 17:00 **Short Talks III** (8 talks, 7 min each)
(Chair: **Carlos Sá de Melo**)

Program

Monday, 14 December 2020

Session 2: Dynamics I (Chair: Carlos Sá de Melo)

17:00 – 17:45	Waseem Bakr	Exploring non-equilibrium dynamics in novel Fermi gas systems
17:45 – 18:30	Monika Schleier-Smith	Quantum spin dynamics with optically programmable interactions
18:30 – 19:30	Wonder Room	Individual discussions between speakers and participants, Socializing

Program

Tuesday, 15 December 2020

Session 3: Crossover (Chair: Christof Weitenberg)

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|---------------|--|---|
| 09:00 – 09:45 | Michael Köhl | Competing magnetic orders in a bilayer Hubbard model with ultracold atoms |
| 09:45 – 10:30 | Artur Widera | Quantum gases in controlled perturbation – from single impurities to time-dependent disorder |
| 10:30 – 11:00 | <i>COFFEE BREAK</i> | |
| 11:00 – 12:30 | Short Talks IV (11 talks, 7 min each)
(Chair: Artur Widera)
<i>Short Talk Nr. 33 cancelled on short notice</i>
<i>Short Talk Nr. 35 cancelled on short notice</i> | |
| 12:30 – 14:00 | <i>LUNCH BREAK</i> | |
| 14:00 – 15:30 | Short Talks V (11 talks, 7 min each)
(Chair: Tim Langen)
<i>Short Talk Nr 47 now Fabio Revuelta</i>
<i>Short Talk Nr. 48 cancelled on short notice</i> | |
| 15:30 – 16:00 | <i>COFFEE BREAK</i> | |
| 16:00 – 17:00 | Short Talks VI (8 talks, 7 min each)
(Chair: Georg Bruun) | |

Sesseion 4: Geometry (Chair: Waseem Bakr)

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| 17:00 – 17:45 | Jean Dalibard | Fresh news from flatland: Testing scale invariance in the lab |
| 17:45 – 18:30 | Cristiane de Morais Smith | Quantum fractals |
| 18:30 – 19:30 | Wonder Room
Individual discussions between speakers and participants,
Socializing | |

Program

Wednesday, 16 December 2020

Session 5: Flat Bands (Chair: Francesca Ferlaino)

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|---------------|---------------------|--|
| 09:00 – 09:45 | Päivi Törmä | Interactions and flat bands: superconductivity in Moiré superlattices and non-Fermi liquid normal states |
| 09:45 – 10:30 | Wei Zhang | Flat-band Ferromagnetism of SU(N) Hubbard Model on Tasaki Lattices |
| 10:30 – 11:00 | <i>COFFEE BREAK</i> | |

Session 6: Contributed Talks I (Chair: Wei Zhang)

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|---------------|--------------------|---|
| 11:00 – 11:30 | Natalia Chepiga | Kibble-Zurek exponent and chiral transition of the period-4 phase of Rydberg chains |
| 11:30 – 12:00 | Tobias Grass | Fractional quantum hall physics with cold atoms – from state preparation to anyon detection |
| 12:00 – 12:30 | Hideki Konishi | Cavity quantum-electrodynamics with atoms and pairs in a strongly interacting Fermi gas |
| 12:30 – 14:00 | <i>LUNCH BREAK</i> | |

Session 6: Contributed Talks II (Chair: Tobias Grass)

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| 14:00 – 14:30 | Tim Langen | Observing the supersolid state of matter using ultracold magnetic atoms |
| 14:30 – 15:00 | Andrea Tononi | Quantum statistical properties of shell-shaped Bose-Einstein condensates |
| 15:00 – 15:30 | Zoe Yan | Resonant dipolar collisions of ultracold molecules induced by microwave dressing |
| 15:30 – 16:00 | <i>COFFEE BREAK</i> | |

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Wednesday, 16 December 2020

Session 7: Miscellaneous (Chair: Sandro Stringari)

16:00 – 16:45	Doerte Blume	Non-exponential tunneling due to mean-field induced swallowtails
16:45 – 17:30	Tin-Lun Ho	The detection of the intrinsic geometric structure of many-body wave functions
17:30 – 17:45	Stefan Jorda	About the Wilhelm and Else Heraeus Foundation
17:45 – 19:30	Wonder Room	
	Individual discussions between speakers and participants, Socializing	

Thursday, 17 December 2020

Session 8: Interferences (Chair: Paivi Törmä)

09:00 – 09:45	Alain Aspect	Hanbury Brown and Twiss bunching of phonons and of the quantum depletion in an interacting Bose gas
09:45 – 10:30	Andreas Buchleitner	Witnessing many-particle interference
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Ernst Rasel	Coherent matter-wave optics on ground and in space

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Thursday, 17 December 2020

Session 9: Quantum Droplets and Supersolids I (Chair: Alain Aspect)

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|---------------|--------------------|---|
| 11:45 – 12:30 | Dmitry Petrov | Mixed bubbles in Bose-Bose mixtures |
| 12:30 – 14:00 | <i>LUNCH BREAK</i> | |
| 14:00 – 14:45 | Giovanni Modugno | Symmetry breaking and superfluidity in a dipolar supersolid |
| 14:45 – 15:30 | Sandro Stringari | Goldstone modes in a harmonically trapped supersolid |
| 15:30 – 15:35 | Conference photo | |

Session 9: Quantum Droplets and Supersolids II (Chair: Doerte Blume)

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| 15:35 – 16:00 | <i>COFFEE BREAK</i> | |
| 16:00 – 16:45 | Francesca Ferlaino | Birth, life, and death of a dipolar supersolid |
| 16:45 – 17:30 | Jun Ye | A degenerate Fermi gas of interacting molecules |
| 17:30 – 19:30 | Wonder Room
Individual discussions between speakers and participants,
Socializing | |

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Friday, 18 December 2020

Session 10: Dynamics II (Chair: Dmitry Petrov)

09:00 – 09:45	Peter Schmelcher	Nonequilibrium quantum dynamics in trapped ultracold bosonic and fermionic mixtures: From quenching across phase boundaries to pump probe spectroscopy
09:45 – 10:30	Georg Bruun	Observing the emergence of a quantum phase transition -- shell by shell
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Thomas Gasenzer	Effective field theories for universal dynamics
11:45 – 11:55	Axel Pelster	Concluding Remarks
11:55 – 12:30	Wonder Room Individual discussions between speakers and participants, Socializing	

End of seminar