

Program for Bad Honnef Physics School 2025

Ultracold Quantum Matter

Sunday, August 10, 2025

14.00 – 18.30 Arrival and Registration
18.30 – 20.00 Dinner
20.00 – 22.00 *Meet and Greet*

Monday, August 11, 2025

08.45 – 09.00 *Opening and Welcome*
Session 1: Quantum Fluids of Light
09.00 – 10.00 David Snoke (Pittsburgh, USA):
Design and characterization of polariton microcavities
10.00 – 10.30 Coffee Break
10.30 – 11.30 Michiel Wouters (Antwerp, Belgium):
Classical field models for condensates of light
12.00 – 13.30 Lunch
13.30 – 14.00 *Questions and Answers/Plenary Discussion 1*
14.00 – 15.00 *Plenary for Poster Sessions 1 & 2*
15.00 – 15.30 Coffee Break
Session 2: Cavity Optomechanics
15.30 – 16.30 Uros Delic (Vienna, Austria):
Cavity optomechanics with polarizable particles: From atoms to dielectric objects
16.30 – 17.00 Coffee Break
17.00 – 18.00 Clara Wanjura (Erlangen-Nürnberg, Germany):
Theory of cavity optomechanics
18.30 – 20.00 Dinner
20.00 – 21.00 *Poster Session 1*

Tuesday, August 12, 2025

Session 3: Quantum Fluids of Light

- 09.00 – 10.00 David Snoke (Pittsburgh, USA):
Crossovers: Polariton BEC to lasing, and equilibrium to nonequilibrium BEC
- 10.00 – 10.30 Coffee Break
- 10.30 – 11.30 Michiel Wouters (Antwerp, Belgium):
Spatio-temporal coherence in nonequilibrium condensates of light
- 12.00 – 13.30 Lunch
- 13.30 – 14.00 *Questions and Answers/Plenary Discussion 2*
- 14.00 – 15.00 *Working Groups 1*
- 15.00 – 15.30 Coffee Break

Session 4: Cavity Optomechanics

- 15.30 – 16.30 Uros Delic (Vienna, Austria):
Collective optomechanics with optically trapped atoms and silica nanoparticles
- 16.30 – 17.00 Coffee Break
- 17.00 – 18.00 Clara Wanjura (Erlangen-Nürnberg, Germany):
Engineering sound and light - From non-reciprocity to non-Hermitian topology
- 18.30 – 20.00 Dinner
- 20.00 – 21.00 *Poster Session 2*

Wednesday, August 13, 2025

Session 5: BEC-BCS Crossover

- 09.00 – 10.00 Cesar Cabrera (Hamburg, Germany):
Experimental Techniques for Exploring the BEC-BCS Crossover
- 10.00 – 10.30 Coffee Break
- 10.30 – 11.30 Hadrien Kurkjian (Toulouse, France):
The BEC-BCS crossover from the normal to the superfluid phase
- 12.00 – 13.30 Lunch
- 13.30 – 18.30 Excursion
- 18.30 – 20.00 Dinner
- 20.00 – *Socializing*

Thursday, August 14, 2025

Session 6: BEC-BCS Crossover

- 09.00 – 10.00 Cesar Cabrera (Hamburg, Germany):
Experimental Techniques for Exploring the BEC-BCS Crossover
- 10.00 – 10.30 Coffee Break
- 10.30 – 11.30 Hadrien Kurkjian (Toulouse, France):
The BEC-BCS crossover from the normal to the superfluid phase
- 12.00 – 13.30 Lunch
- 13.30 – 14.00 *Questions and Answers/Plenary Discussion 3*
- 14.00 – 15.00 *Plenary for Poster Sessions 3 & 4*
- 15.00 – 15.30 Coffee Break

Session 7: Topology

- 15.30 – 16.30 Sylvain Nascimbene (Paris, France):
Engineering topological quantum matter in ultracold atomic gases
- 16.30 – 17.00 Coffee Break
- 17.00 – 18.00 Patrik Öhberg (Edinburgh, UK):
The role of topology in nature – From the standard model to condensed matter physics
- 18.30 – 20.00 Dinner
- 20.00 – 21.00 *Poster Session 3*

Friday, August 15, 2025

- 09.00 – 10.00 Sylvain Nascimbene (Paris, France):
Engineering topological quantum matter in ultracold atomic gases
- 10.00 – 10.30 Coffee Break

Session 8: Dipolar Systems

- 10.30 – 11.30 Silke Ospelkaus (Hanover, Germany):
Ultracold polar molecules
- 12.00 – 13.30 Lunch
- 13.30 – 14.00 *Questions and Answers/Plenary Discussion 4*
- 14.00 – 15.00 *Working Groups 2*
- 15.00 – 15.30 Coffee Break
- 15.30 – 16.30 Silke Ospelkaus (Hanover, Germany):
Ultracold polar molecules
- 16.30 – 17.00 Coffee Break
- 17.00 – 18.00 Luis Santos (Hanover, Germany):
Dipolar gases: from supersolids to lattice models
- 18.30 – 20.00 Dinner
- 20.00 – 21.00 *Poster Session 4*

Saturday, August 16, 2025

Session 9: **Topology**

09.00 – 10.00 Patrik Öhberg (Edinburgh, UK):

The role of topology in nature – From the standard model to condensed matter physics

10.00 – 10.30 Coffee Break

Session 10: **Dipolar Systems**

10.30 – 11.30 Luis Santos (Hanover, Germany):

Dipolar gases: from supersolids to lattice models

11.30 – 11.45 *Concluding Remarks*

11.45 – 13.30 Lunch

13.30 – Departure