

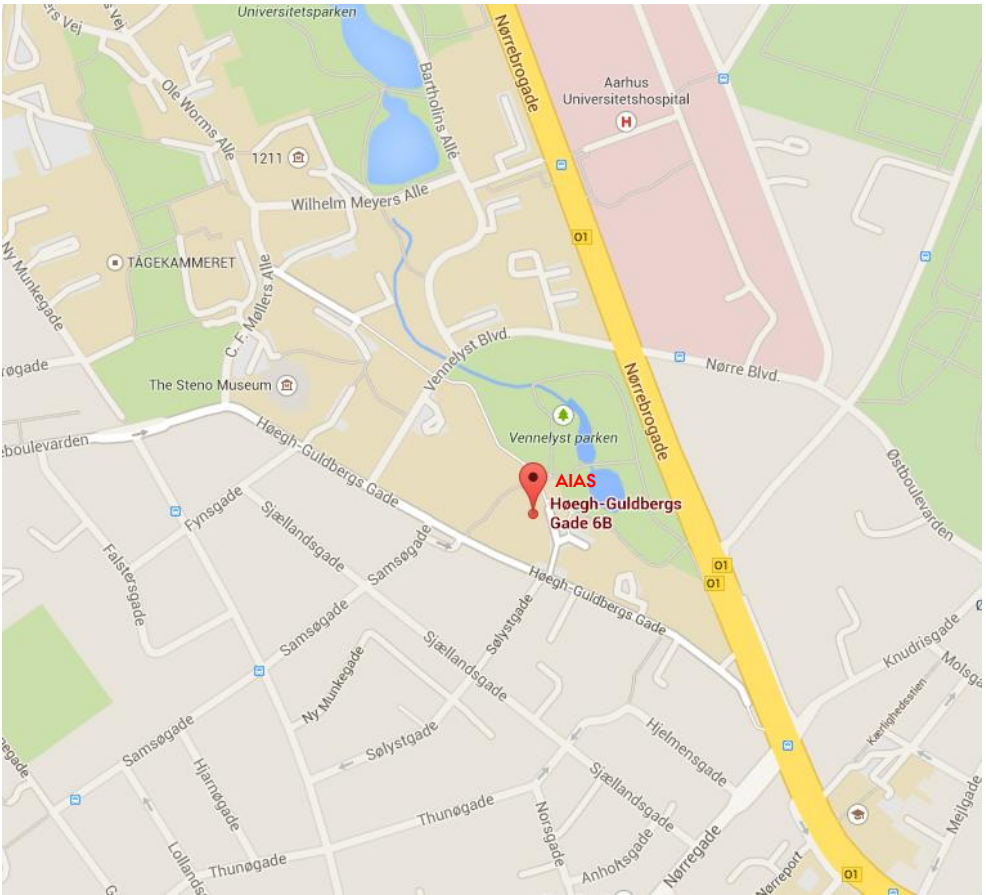
# COLD ATOMS AND BEYOND PROGRAMME

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AARHUS  
UNIVERSITY

AARHUS INSTITUTE OF ADVANCED STUDIES



## VENUE

AARHUS INSTITUTE OF ADVANCED STUDIES, AIAS  
HØEGH-GULDBERGS GADE 6B  
8000 AARHUS C  
BUILDING 1630-1632

[WWW.AIAS.AU.DK](http://WWW.AIAS.AU.DK)

# WELCOME

Dear Guest,

The organizers and AIAS give you our warmest welcome, and we wish you a very pleasant and thought-stimulating Cold Atoms Conference.

Enjoy your days in Aarhus!

Best wishes,

Jesper Levinsen, Georg Bruun and the AIAS

## Conference abstract

In recent years, the field of ultracold atoms has experienced an explosion of activity, producing results of fundamental importance well beyond the confines of traditional atomic physics. While much of the current progress is inspired by the physics of solid state systems, the question remains to what degree cold atoms may inspire other fields, i.e. what are the important questions in modern physics, which cold atoms may help address and potentially solve?

## DAY 1

Wednesday 25 June 2014

Time: 13.30-18.30

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|---------------|--|
| 13.30 – 13.55 | Registration   |
| 13.55 – 14.00 | Opening remarks  |
| 14.00 – 14.45 | Yusuke Nishida<br>New analogies between cold atoms and high-energy physics                               |
| 14.45 – 15.15 | Jan Arlt<br>Correlations and entanglement in spinor quantum gasses                                       |
| 15.15 – 16.00 | Coffee break   |
| 16.00 – 16.30 | Jean-Philippe Brantut<br>Observation of Quantized Conductance in Neutral Matter                          |
| 16.30 – 17.00 | Kris Van Houcke<br>Summing Feynman diagrams for strongly correlated fermions                             |
| 17.00 – 17.30 | Sebastian Diehl<br>Non-Equilibrium Universality in the Heating Dynamics of Interacting Luttinger Liquids |
| 17.30 – 18.00 | Wine break   |
| 18.00 – 18.30 | Matteo Zaccanti<br>Ultracold Fermi mixtures with resonant interactions                                   |
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# DAY 2

Thursday 26 June 2014

Time: 9.00 - 18.00

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|---------------|---|
| 09.00 – 09.45 | Brian Møller Andersen<br>Unconventional superconductivity in correlated electron systems - the role of competing phases |
| 09.45 – 10.15 | Leticia Tarruell<br>Short-range quantum magnetism of ultracold fermions in an optical lattice                           |
| 10.15 – 11.00 | Coffee break  |
| 11.00 – 11.30 | Jonas Larson<br>Towards new states of matter with atoms and photons   |
| 11.30 – 12.00 | Richard Schmidt<br>Field-theoretical Study of the Bose Polaron - Challenges for Quantum Simulation with ultracold Atoms |
| 12.00 – 12.30 | Pietro Massignan<br>Efimov physics under strong confinement   |
| 12.30 – 14.00 | Lunch   |



The programme for the afternoon continues on the next page

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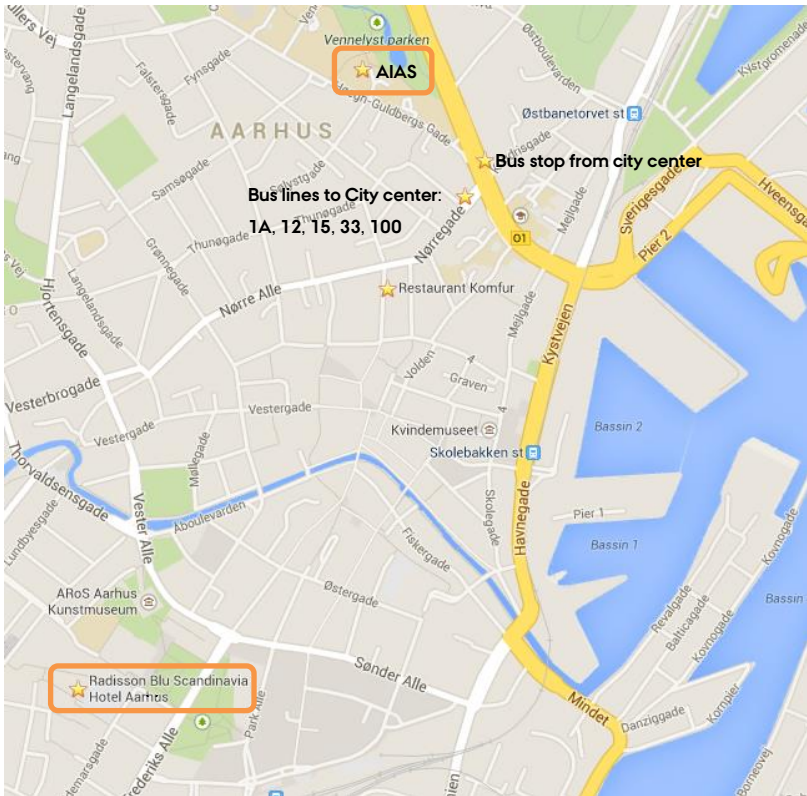
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| 14.00 – 14.45 | Achim Schwenk<br>TBA   |
| 14.45 – 15.15 | Tilman Enss<br>Universal quantum transport in strongly interacting Fermi gases                                 |
| 15.15 – 15.45 | Zhenhua Yu<br>Superradiance of Fermi Gases in a Cavity   |
| 15.45 – 16.15 | Coffee break   |
| 16.15 – 16.45 | Meera Parish<br>Fermions in two dimensions   |
| 16.45 – 17.15 | Selim Jochim<br>One, two, three, many: Creating quantum systems one atom at a time                             |
| 17.15 – 17.45 | Vijay Shenoy<br>Fermions in synthetic non-Abelian gauge fields: From Rashbon condensates to Novel Hamiltonians |
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# DAY 3

Friday 27 June 2014

Time: 9.00 - 15.00

- 09.00 – 09.45 Nathan Goldman  
Gauge fields and topological phases with cold atoms: Baby, you can drive my cloud!
- 09.45 – 10.15 Edward Taylor  
The angular momentum problem in He-3 and topological superconductors: Using cold atoms to solve a 40 year old problem
- 10.15 – 11.00 Coffee Break
- 11.00 – 11.30 Hans Peter Büchler  
Majorana modes and p-wave superfluids for fermionic atoms in optical lattices
- 11.30 – 12.00 Anders Mathias Lunde  
Current-induced magnetization in a two-dimensional topological insulator coupled to an environment of localized spins
- 12.00 – 12.30 Stefan Baur  
Dynamic optical superlattices with topological bands and adiabatic creation of vortex lattices of bosons
- 12.30 – 14.00 Lunch
- 14.00 – 14.30 Carlos Lobo  
Optical lattices with large scattering length
- 14.30 – 15.00 Nikolaj Zinner  
Strongly interacting particles in one-dimensional confining geometries
- 15.00 - Closing remarks
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## ORGANISORS

Jesper Fredenslund Levinsen, Dale T. Mortensen Junior Fellow at Aarhus Institute of Advanced Studies, AIAS, and Georg Bruun, Dep. of Physics and Astronomy, Aarhus University, Denmark.