Workshop on Ultracold Quantum Gases and Numerical Simulations

Schedule

Tue, 27.05.2014		Wed, 28.05.2014	
13:00 – 13:10	Welcome	10:00 – 10:30	Sven Herrmann
13:10 – 14:00	Hauke Müntinga	10:30 – 11:30	Albert Roura
14:00 – 15:00	Axel Pelster	11:30 – 12:30	Reinhold Walser
15:00 – 15:30	Coffee	12:30 – 13:00	lunch
15:30 – 16:30	Abel Camacho	13:00 – 13:45	Hannes Uecker
16:30 – 17:30	Naceur Gaaloul	13:45 – 14:45	Antun Balaz
17:30 – 18:15	Ertan Göklü	15:00 – 16:00	Lab tour
18:15 – 20:00	Poster session + BBQ		

Talks

Tuesday

1. **Ertan Göklü:** "An overview over the ATUS activities"
2. **Naceur Gaaloul:** "Precision atom interferometry with degenerate gases"
3. **Hauke Müntinga:** "Matterwave interferometry in the drop tower"
4. **Abel Camacho:** "Superfluidity in a Bose-Einstein condensate and the role of gravity in the context of Landau's criterion"
5. **Axel Pelster:** "Perturbative and Non-Perturbative Methods for Tackling the Dirty Boson Problem"

Wednesday

1. **Sven Herrmann:**"PRIMUS, another pathfinder drop tower project"
2. **Albert Roura:** "Long-time atom interferometry with ultracold gases"
3. **Reinhold Walser:** "Matter wave optics and what it takes to simulate partial coherent waves"
4. **Hannes Uecker:** "BEC with pde2path"
5. **Antun Balaz:** "Faraday waves in collisionally inhomogeneous Bose-Einstein condensates"

Posters

1. **Wolfgang Zeller:** "Density profiles and contrast in open atom interferometers"
2. **Enno Giese:** "Double Bragg diffraction: A new tool for atom optics"
3. **Matthias Meister:** "Analytic study of the expansion dynamics of multi-species Bose-Einstein condensates"
4. **Stephan Kleinert:** "Representation-free description of matter-wave interferometry"

5. **Želimir Marojević:** “Multiple Solutions of the Time Independent Gross-Pitaevskii Equation”
6. **Vladimir Veljic:** “Boltzmann-Vlasov Formalism for Ultracold Quantum Gases”
7. **Axel Pelster:** “Crossover from Adiabatic to Sudden Quench Dynamics for Time-of-Flight Imaging Measurements in BECs”
8. **Axel Pelster:** “Bose-Einstein Condensation with Strong Disorder: Replica Method”
9. **Axel Pelster:** “Bose-Einstein Condensates with Strong Disorder: Gaussian Approximation for Correlation Functions”
10. **Abel Camacho:** tba
11. **Roman Nolte :** “Molecular Dynamics of Trapped Cold Gases on GPUs”
12. **Luis Fernando Barragán:** “Matter Interferometry with Gaussian States”
13. **Oliver Gabel:** “Relativistic Tidal Corrections for Free Falling Bose-Einstein Condensates”
14. **Katerine Possot:** “Precision interferometry with degenerate mixtures”

Workshop venue

ZARM
Universität Bremen
Am Fallturm
28359 Bremen

Organizer

Ertan Göklü
Space Science group
goeklue@zarm.uni-bremen.de
Tel (office): 0421 218-57944
Tel (mobile): 0160 96842557

The workshop will take place in the conference room 1730. If needed, on both days you can have access to the small meeting room 1040 where you can work without getting distracted.

How to reach ZARM

From the city center

By train The central station is located right in the heart of the city center and ZARM can be easily reached by taxi and tram. If you take the exit **City** you will find a tram station right in front of the of the central railway station. Please take line 6 **direction Universität** and after 10 minutes you will reach ZARM.

Please get off the tram at **Klagenfurterstraße**, and you will spot the drop tower around 200 m ahead of you.

Taxi stands are located at both exits of the central railway station. By taxi, you will reach ZARM in 10 - 15 minutes, and the fare is about 14.00 EUR. The German word for drop tower is "Fallturm", a building and address most taxi drivers will be familiar with.

By plane Bremen can easily be reached by plane. The City Airport Bremen is only a few minutes away from the City Center and the campus of the University of Bremen. You will find a taxi stand and a tram station right in front of the exit of the airport.

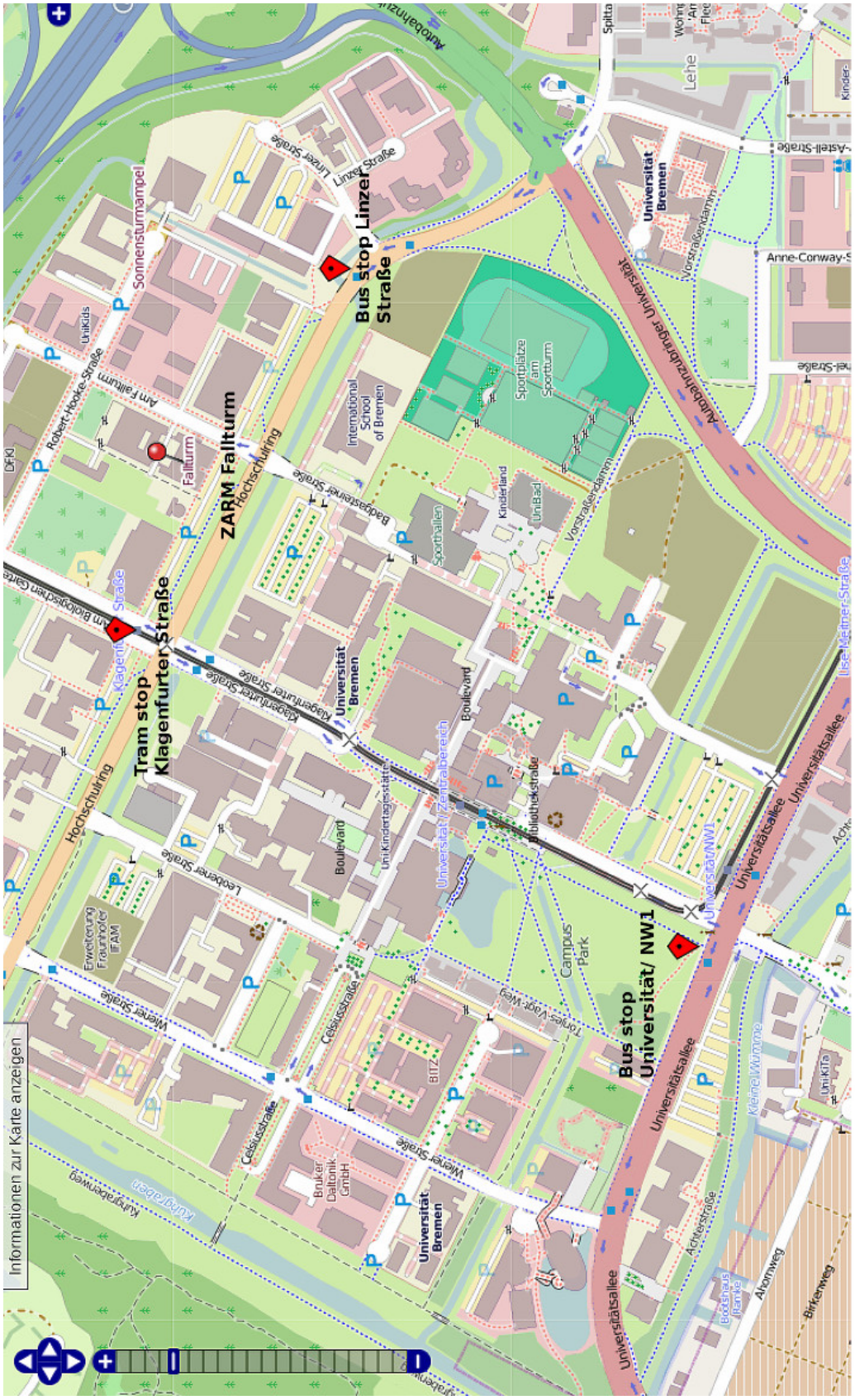
Take tram line 6 direction **Universität** and after only 30 minutes you will reach the campus. Please get off the tram at **Klagenfurterstraße** and you will see ZARM's drop tower around 200 m ahead of you.

By taxi, you will reach ZARM in 15-20 minutes, and the tour fee is about 25.00 EUR.

From the hotel "Horner Eiche"

By bus At the station **Kopernikusstraße** take the line 31 **direction Nedderland** and get off at **Linzer Straße**. From there it is a 5 minutes walk to reach ZARM.

Alternatively, you can take the line 670 (**direction Bremen HBF**) or 630 (**also direction Bremen HBF**) and get off at **Universität/NW 1**. From there it is a walk of roughly 10 minutes to arrive at ZARM.



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How to reach the hotel “Horner Eiche”

The earliest check-in is at 14:00 h and the latest check-out at 11:30 h.
If your arrival is later than 18:00 h please let them know beforehand.

Hotel Horner Eiche
Im Hollergrund 1
28359 Bremen
Tel.: (0421) 27 82 0

By tram from the central station At the central station take the line 4 **direction Borgfeld** and get off at **Kopernikusstraße**. Change to the left side of the street “Lilienthaler Heerstraße” with respect to the travelling direction of the tram. Walk towards the large crossing where Lilienthaler Heerstraße and Autobahnzubringer Horn-Lehe intersect. Now cross the street Autobahnzubringer Horn-Lehe and turn left. Walk 100 m straight ahead until you reach the hotel which is located at “Im Hollergrund 1”.

List of participants

Abel Camacho	Universidad Autónoma Metropolitana Iztapalapa, Physics Department, México, DF
Albert Roura	Universität Ulm, Institut für Quantenphysik
Antun Balaz	Institute of Physics, Belgrade
Axel Pelster	TU Kaiserslautern, Theory of condensed matter and many body systems
Claus Lämmerzahl	ZARM, Universität Bremen
Enno Giese	Universität Ulm, Institut für Quantenphysik
Ernst Rasel	Leibniz Universität Hannover, Atom Optics and Quantum Sensors
Ertan Göklü	ZARM, Universität Bremen Experimental Gravitation and Quantum Optics
Hauke Müntinga	ZARM, Universität Bremen Experimental Gravitation and Quantum Optics
Hannes Uecker	Carl von Ossietzky Universität Oldenburg, Institut für Mathematik
Holger Ahlers	Leibniz Universität Hannover, Atom Optics and Quantum Sensors
Katerine Possot	Leibniz Universität Hannover, Atom Optics and Quantum Sensors
Naceur Gaaloul	Leibniz Universität Hannover, Atom Optics and Quantum Sensors
Luis Fernando Barragán Gil	TU Darmstadt, Theoretische Quantendynamik
Oliver Gabel	TU Darmstadt, Theoretische Quantendynamik
Rainer Forke	Deutsches Zentrum für Luft- und Raumfahrt (DLR) Raumfahrtmanagement
Reinhold Walser	TU Darmstadt, Theoretische Quantendynamik
Roman Nolte	TU Darmstadt, Theoretische Quantendynamik
Stephan Kleinert	Universität Ulm, Institut für Quantenphysik
Sven Herrmann	ZARM, Universität Bremen Experimental Gravitation and Quantum Optics
Tammo Sternke	ZARM, Universität Bremen Experimental Gravitation and Quantum Optics
Vladimir Veljic	Institute of Physics, Belgrade
Wolfgang Schleich	Universität Ulm, Institut für Quantenphysik
Wolfgang Zeller	Universität Ulm, Institut für Quantenphysik
Želimir Marojević	ZARM, Universität Bremen Experimental Gravitation and Quantum Optics