

# CV - Thomas BILITEWSKI

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Hildesheim, Germany | 1<sup>st</sup> October 1987  
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## PROFESSIONAL EXPERIENCE

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- since September 2019* Research Associate in Prof. Rey's group at UNIVERSITY OF COLORADO, BOULDER
- since October 2016* Postdoctoral researcher in the Theory of Condensed Matter Group at the MAX PLANCK INSTITUTE FOR THE PHYSICS OF COMPLEX SYSTEMS  
 My first project in my postdoc phase branched out from my previous expertise in cold-atomic gases into the field of frustrated magnetism.  
 Specifically, the project explores aspects of geometric frustration, disorder and glassiness in the paradigmatic classical Kagome Heisenberg Antiferromagnet. We discover a new type of spin-liquid, surprisingly stable to bond-disorder, and in fact only present due to disorder. Furthermore, the model displays intriguing connections to the physics of jamming and the physics of topological lattices.  
 Related to this model we also discovered disordered flat bands in a hopping model on the kagome lattice allowing to gap the quadratic band touching point, which provides new avenues to study interacting flat band and topological physics suppressing inter-band scattering.  
 I also had the opportunity to collaborate with an experimental group on a project concerning the observation and explanation of an inverted hysteresis in a pyrochlore compound.  
 Finally, using classical spin liquids as a platform we were able to study quantitatively the temperature dependence of the butterfly effect in a microscopic model, gaining insight into connections between microscopic chaos and macroscopic transport, and the relation between classical chaos and the (semi-) classical limit of quantum chaos.
- 2013-2016 PhD student in the Theory of Condensed Matter Group (TCM) at the UNIVERSITY OF CAMBRIDGE (UK), TRINITY COLLEGE  
 During my PhD I worked in the area of cold gas systems. My project was motivated by recent experimental developments, in particular the time-modulated tuning of system parameters in cold gas set-ups, e.g. as described by Floquet Theory. It explores the novel aspects arising in these quantum many-body systems focusing on both time-dependent effects and collective many-body phases. Generically, these systems are expected to heat up, and I investigated how to obtain and control the heating rates in such systems and applied the results to a current experimental setup in agreement with the experimental data. Publications are listed separately below.  
 Thesis Title: Interacting atoms in time-dependent potentials and artificial gauge fields  
 Supervisor: Prof. Nigel R. Cooper
- 2013 - 2016 Supervisor for PEMBROKE COLLEGE AT UNIVERSITY OF CAMBRIDGE  
 Teaching small groups of students (2-3) reading for a degree in Natural Sciences (NST). Includes marking homework assignments and preparing termly supervision reports on the students' progress for their director of studies.  
 I'm currently taking part in the TEACHING ASSOCIATES' PROGRAMME, a program providing an introduction to teaching and learning in higher education, which after successful completion will lead to the recognition as an Associate Fellow of the Higher Education Academy.
- OCTOBER 2012 - SEPTEMBER 2013 Master-Thesis at the chair for Theoretical Nanophysics at LUDWIG-MAXIMILIANS-UNIVERSITY, MUNICH  
 In my master's project I investigated (exotic) superfluidity of mixtures of bosons and fermions in 2-dimensional optical lattices employing determinantal Quantum Monte-Carlo simulations. Specifically, I studied whether the bosons can induce (exotic) superconductivity in the fermionic sector.  
 As part of the project I developed the simulation program from scratch.

The main results have been published as "Exotic superconductivity through bosons in a dynamical cluster approximation" in Phys. Rev. B 92, 184505 (2015).

DOI: <http://dx.doi.org/10.1103/PhysRevB.92.184505>

Thesis Title: Superconductivity in two dimensional Bose-Fermi-Mixtures: A Dynamical-Cluster- Approximation Study

Supervisor: Prof. Lode Pollet

2011 - 2013

Student Tutor at LUDWIG-MAXIMILIANS-UNIVERSITY, Munich

Teaching example classes for first year students in Physics to groups of 10-25 students, including marking homework assignments and exams.

MARCH 2011 -  
OCTOBER 2011

Bachelor-Thesis at MAX-PLANCK-INSTITUTE FOR ASTROPHYSICS in Munich

In my Bachelor's thesis I worked on radial flows in models of Galactic chemical evolution.

During the project I developed a model of the coupling of galactic inflow/infall of matter onto the galactic disc and to radial flows within the disc and implemented this model in a simulation code. The simulation results allowed to clearly distinguish between different proposed models of matter aggregation in galaxies.

The results of my thesis have been published as "Radial flows and angular momentum conservation in Galactic chemical evolution" in Monthly Notices of the Royal Astronomical Society, 426, 2266-2282, 2012.

DOI: [10.1111/j.1365-2966.2012.21827.x](https://doi.org/10.1111/j.1365-2966.2012.21827.x)

Supervisor: Ralph Schoenrich

2008 - 2009

Member and Teamleader at AIESEC Munich

Responsible for integration of international trainees into local committee, organization of activities and excursions, leading a team of 2-4 persons, strategic planning with responsible vicepresident and team leaders, budget planning and reporting in cooperation with the VP Finance.

JULY 2007 -  
MARCH 2008

Alternative Civilian Service (Zivildienst) at St. Bernwards Hospital

assigned to the walk-in clinic

## EDUCATION

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OCTOBER 2013-  
OCTOBER 2016

PhD Student at UNIVERSITY OF CAMBRIDGE (UK)

TRINITY COLLEGE

Supervisor: Prof. Nigel R. Cooper

OCTOBER 2015 -  
JUNE 2016

Teaching Associates' Programme

Program providing an introduction to teaching and learning in higher education. After successful completion I have become an Associate Fellow of the Higher Education Academy.

2011 -2013

Master of Science at LUDWIG-MAXIMILIANS-UNIVERSITY, Munich (Germany)

Student in the Elite Graduate Program "Theoretical and Mathematical Physics (TMP)", part of the elite network of Bavaria.

Final Grade : **1.0**

2008 - 2011

Bachelor of Science at LUDWIG-MAXIMILIANS-UNIVERSITY, Munich (Germany)

Bachelor student in Physics

Final Grade : **1.02**

MARCH-OCTOBER  
2008

Junior-Studies at LEIBNIZ-UNIVERSITY, Hannover (Germany)

1998 - 2007

Abitur (A-level equivalent) **1.0** on a scale from 1 (best) to 6 (worst)

Bischöfliches Gymnasium Josphinum, Hildesheim (Germany)

1994 - 1998

Primary school

Bonifatius-School (Germany)

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## SCHOLARSHIPS AND HONOURS

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- 2013 - 2016      **EPSRC Full Scholarship**  
Full funding (tuition fees and maintenance) plus travel funding for PhD studies
- 2010 - 2013      **Scholarship of the “Max Weber-Programm”**  
program for highly-gifted students at universities in Bavaria, includes a stipend and offers an advanced study program, both academic and interdisciplinary, language courses and soft-skill seminars. implemented by the German National Merit Foundation (Studienstiftung des deutschen Volkes)
- 2010 - 2013      **Member of the Elite Network of Bavaria**  
The Elite Network of Bavaria is an initiative to support young academic talents. I was supported due to being a student in an Elite Graduate Program and holding a scholarship by the Max Weber-Program of Bavaria.
- JULY 2007      **Abitur prize from the German physical Society (Deutsche Physikalische Gesellschaft) and Society of German Chemists (Gesellschaft Deutscher Chemiker)**