

# Maximilian Attems

*curriculum vitae*

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## Personal data

**Birth place** Paris, France.

**Citizenship** Austrian, Belgium.

**Gender** Male.

**Languages** French, German: native.

English, Spanish: fluent.

Latin, Portuguese: basic.

## Professional Appointments

September 2017 - Current **Postdoctoral Fellow**, *Galician Institute for High Energy Physics (IGFAE), University of Santiago de Compostela, Spain.*

March 2014 - August 2017 **Postdoctoral Marie Skłodowska-Curie Fellow**, *Institute of Cosmos Sciences (ICC), University of Barcelona, Spain.*

October 2012 - February 2014 **Postdoctoral Fellow**, *Frankfurt Institute for Advanced Studies, Germany.*

## Education

2007 - 2012 **PhD in Theoretical Physics**, *Institute for Theoretical Physics, Vienna University of Technology, Austria.* Defense date: March 7th, 2012.

**PhD Thesis** “Real-time evolution of a non-equilibrium non-Abelian plasma”  
Advisor: Anton Rebhan

2004 - 2006 **Master Studies (Diplomingenieur) in Theoretical Physics**, *Vienna University of Technology, Austria.* Defense date: October 4th, 2006.

**Master Thesis (Diplomarbeit)** “Gauge independence of IR singularities in Slavnov modified Noncommutative U(1) QED”.  
Advisor: Manfred Schweda

## Academic Awards, Fellowships and Grants

2015 - 2017 **EU Horizon 2020 Marie Skłodowska-Curie Action Individual Fellowship**, “Fast Thermalization of the Quark-Gluon-Plasma (FastTh)”, University of Barcelona, Spain, 152 k€.

2012 - 2014 **Postdoctoral Scholarship Helmholtz Young Investigator Group**, *Dynamical description of heavy-ion reactions at FAIR*, Frankfurt Institute for Advanced Studies, Germany.

2011 **Vienna University of Technology PhD outgoing scholarship**, 2 months visiting scholarship *Centre de Physique Théorique, Ecole Polytechnique, Palaiseau, and Institut de Physique Théorique, CEA/Saclay, France*, 1.5 k€.

2010 **Marshall Plan Scholarship**, 3 months US-Austrian scholarship in collaboration with Michael Strickland at the Department of Physics, Gettysburg College, USA, 6 k€.

2006 - 2007 **PhD Program Helmholtz Research School**, 3 months visiting scholarship “Strongly Interacting Matter”, Institute for Theoretical Physics, Goethe University Frankfurt, 2 k€.

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## Summary of research, publications, teaching and funding

Research Interests: AdS/CFT, numerical general relativity, out-of-equilibrium quantum field theories, heavy-ion collisions, Quark-gluon plasma, lattice QCD

13 scientific papers: 8 publications in peer reviewed international journals, 5 proceedings for international conferences

26 talks at international conferences

Co-Supervision of 3 PhD students

> 150 k€ from individual competitive research grants

> 9 CPU Terahours of scientific High Performance Computing

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## Unique Author Identifier

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## Talks

### Conferences

- September 2017 **RES 2017 user day**, *Spanish supercomputing network meeting: "Holographic Heavy-Ion Collisions"*, Santiago de Compostela, Spain.
- September 2017 **Initial Stages 2017:** *"Holographic collisions in non-conformal theories"*, Cracow, Poland.
- August 2017 **CPOD 2017:** *"Holographic collisions in non-conformal theories"*, Stony Brook, USA.
- August 2017 **CPOD 2017:** *"Excitation and saturation of the spinodal instability"*, Stony Brook, USA.
- June 2017 **XQCD 2017:** *"Fast Hydrodynamization of Non-conformal Holographic Shockwaves"*, Pisa, Italy.
- June 2017 **Lattice 2017:** *"Paths to equilibrium in non-conformal collisions"*, Granada, Spain.
- June 2017 **Erwin Schrödinger Institute workshop 2017, Quantum Physics and Gravity:** *"Non-conformal shock wave collisions"*, Vienna, Austria.
- January 2017 **33rd Winter Workshop on Nuclear Dynamics:** *"Hydrodynamization of shockwave collisions in non-conformal theories"*, Snowbird, USA.
- July 2016 **Strong and Electroweak Matter 2016:** *"Collisions in Non-conformal Theories: Hydrodynamization without Equilibration"*, University of Stavanger, Norvegia.
- June 2016 **Numerical Relativity and Holography 2016:** *"Holographic Heavy Ion Collisions in Non-Conformal Theories"*, Universidad de Santiago de Compostela, Spain.
- May 2016 **3rd International Conference on the Initial Stages in High-Energy Nuclear Collisions:** *"From high-energy collisions to hydrodynamics in strongly coupled non-conformal theories"*, Instituto Superior Técnico, Lisbon, Portugal.
- October 2015 **Computational Physics for High-Energy Heavy-Ion Collisions:** *"SU(3) plasma instabilities"*, Yukawa Institute for Theoretical Physics, Kyoto, Japan.
- August 2015 **Equilibration Mechanisms in Weakly and Strongly Coupled Quantum Field Theory INT-15-2c:** *"Non-conformal shockwave collisions"*, Institute for Nuclear Theory, University of Washington, Seattle, USA.
- December 2014 **Initial State 2014:** *"Quantized fermions in semi-classical Yang-Mills evolution"*, Napa Valley, California, USA.
- October 2014 **Hot Quarks 2014:** *"Quantized fermions in semi-classical Yang-Mills evolution"*, Las Negras, Spain.

- April 2014 **The Approach to Equilibrium in Strongly Interacting Matter:** *"Instabilities in the expanding plasma"*, Brookhaven National Laboratory, USA.
- November 2013 **New Frontiers in QCD 2013:** *"Realtime fermions in an anisotropic plasma"*, Yukawa Institute for Theoretical Physics, Kyoto, Japan.
- July 2013 **Workshop on Transport Theory in Heavy Ion Collisions:** *"Towards a new transport approach: Simulations of a hot pion gas"*, Schmitten, Germany.
- June 2013 **High energy, high density and hot QCD:** *"The chromo-Weibel instability in an expanding background"*, ECT\* Trento, Italy.
- February 2013 **Extreme QCD in and out of Equilibrium:** *"Longitudinal Thermalization via the Chromo-Weibel Instability"*, Schlading Winterschool, Austria.
- December 2012 **Second Norwegian Winter Workshop on QCD in Extreme Conditions:** *"Longitudinal Thermalization via the Chromo-Weibel Instability"*, University of Science and Technology Trondheim, Norway.
- October 2012 **Xth Quark Confinement and the Hadron Spectrum:** *"Longitudinal thermalization via the chromo-Weibel instability"*, Technical University of Munich, Germany.
- November 2011 **8th Vienna Central European Seminar:** *"Chromo-Weibel plasma instabilities in Bjorken expansion"*, University of Vienna, Austria.
- September 2011 **Quarks, Gluons, and Hadronic Matter under Extreme Conditions:** *"Instabilities in anisotropically expanding quark-gluon plasma"*, Helmholtz International Center, Bielefeld University, Germany.
- March 2011 **Quarks, Gluons, and Hadronic Matter under Extreme Conditions:** *"Instabilities in anisotropically expanding quark-gluon plasma"*, Helmholtz International Center for FAIR, St. Goar, Germany.
- March 2011 **5th International School Quark-Gluon Plasma and Heavy Ion Collisions: past, present, future:** *"Chromo-Weibel plasma instabilities in Bjorken expansion"*, Turin, Italy.
- September 2009 **Austrian and Swiss Physical Society Annual Meeting:** *"On the collision of two shock waves in AdS(5)"*, University of Innsbruck, Austria.
- September 2008 **Austrian Physical Society Annual Meeting:** *"Instabilities in an expanding quark-gluon plasma"*, Aflenz, Austria.

#### Seminars

- April 2017 **Black Hole Initiative Colloquium:** *"Fast Hydrodynamization of Non-conformal Holographic Shockwaves"*, BHI, Harvard University, Cambridge, USA.
- March 2017 **CPhT/IPN common Theoretical physics particle Seminar:** *"Hydrodynamization and EoSization in non-conformal theories"*, CPhT, Ecole Polytechnique, France.
- March 2017 **IPhT Particle physics and cosmology Seminar:** *"Non-conformal holographic fluid relaxation"*, IPhT, CEA/Saclay, France.
- October 2016 **Brookhaven Nuclear Physics Seminar:** *"EoSization in holographic shockwave collision"*, Brookhaven National Laboratory, USA.
- May 2016 **CERN Heavy Ion Forum:** *"Collisions in Non-conformal Theories: Hydrodynamization without Equilibration"*, CERN/Geneva, Switzerland.
- December 2015 **KITP High Energy and Gravity Seminar:** *"Holographic collisions in non-conformal theories"*, University of California Santa Barbara, USA.
- December 2015 **Boulder Nuclear Seminar:** *"Non-conformal holographic model of heavy ion collisions"*, University of Colorado Boulder, USA.
- November 2015 **HotLHC Seminar:** *"Non-conformal holographic planar shock collisions"*, University of Santiago de Compostela, Spain.

- November 2013 **LBNL Theory Seminar:** *"Realtime evolution of Chromo-Weibel instabilities"*, Lawrence Berkeley National Laboratory, USA.
- November 2013 **Ohio Nuclear Physics Seminar:** *"Longitudinal thermalization via the Chromo-Weibel instability"*, Ohio State University, USA.
- November 2013 **Kent QCD Seminar:** *"Chromo-Weibel filaments in the Quark-Gluon Plasma"*, Kent State University, USA.
- November 2013 **CUNY Physics Seminar:** *"Filamentation instability in non-Abelian plasma"*, Baruch College - The City University of New York, USA.
- November 2013 **Nuclear Physics & RIKEN Theory Seminar:** *"Realtime evolution of non-Abelian plasma instabilities"*, Brookhaven National Laboratory, USA.
- May 2013 **Vienna Theory Lunch Seminar:** *"Kinetic models of ultrarelativistic heavy-ion collisions"*, University of Vienna, Austria.
- November 2012 **Bielefeld HEP Seminar:** *"Chromo-Weibel instabilities in Bjorken expansion"*, Bielefeld University, Germany.
- January 2012 **CERN Heavy Ion Forum:** *"Chromo-Weibel plasma instabilities in Bjorken expansion"*, CERN/Geneva, Switzerland.
- December 2011 **IPhT Seminar:** *"Chromo-Weibel plasma instabilities in Bjorken expansion"*, Institut de Physique Théorique, CEA/Saclay, France.
- November 2011 **IPN Seminar:** *"Chromo-Weibel plasma instabilities in Bjorken expansion"*, Centre de Physique Théorique, Ecole Polytechnique Palaiseau, France.
- January 2011 **Graz Particle Physics Seminar:** *"Instabilities in the quark-gluon plasma"*, University of Graz, Austria.
- October 2010 **Vienna Theory Lunch Seminar:** *"Instabilities in the quark-gluon plasma"*, University of Vienna, Austria.

## Teaching Experience

### Guest-Lecturer

- June 2014 Seminar on Theoretical Physics in **CiMs-CELLEX outreach programm** in Theoretical Physics for gifted university students [www.cims-cellex.cat](http://www.cims-cellex.cat)
- July 2013 Seminar in **Frankfurt International Graduate School for Science:** *"Weibel instabilities and thermalization in quantum chromodynamics"*, FIAS, Germany.

### Supervising activities

- 2014 - 2017 **Ph.D. student**, *M. Triana*, advisor: *D. Mateos*, University of Barcelona.
- 2014 - 2015 **Ph.D. student**, *D. Santos*, advisor: *C.F. Sopuerta*, Autonomous Uni. of Barcelona.
- 2013 - 2014 **Ph.D. student**, *C. Schaefer*, advisor: *O. Philipsen*, Goethe University of Frankfurt.

### Teaching Assistant

- 2006 **Graduate Teaching Assistant**, *Quantum Theory II*, Institute for Theoretical Physics, Vienna University of Technology.
- 2004-2006 **Undergraduate Teaching Assistant**, *Mathematical Methods in Physics*, Institute for Theoretical Physics, Vienna University of Technology.

## Professional Activities

### Seminar organisation

- 2017 **Organiser**, *HotLHC Theory Seminar at IGFAE*.
- 2008-2010 **Co-Founder**, *Vienna Theory Lunch Seminar*, in cooperation with the University of Vienna.

## Institutional responsibilities

2017 **Electoral committee member** for the Rector Election of the University of Barcelona.

## Outreach

2016- **Author** on twitter: [@thermalization](#) with > 500 scientific tweets and > 100 community followers; conference coverage on [#InitialStages2017](#), [#CPOD2017](#), [#Lattice2017](#), [#QM17](#), [#wwnd33](#), [#InitialStages2016](#), [#NumHol2016](#), [#sewm2016](#); seminar activity at ICC.

2017 **Author** of outreach exposition 2017/2018 ICC, Dark Matter poster

May 2009 **Initiator**, One of the three initiators of the petition: "Save our Science" for Austria not quitting CERN membership: [sos.teilchen.at](http://sos.teilchen.at)

2009-2012 **Relaunch/Admin**, Particle physics news from the Committee for Nuclear and Particle Physics from the Austrian Physical Society (German): [www.teilchen.at](http://www.teilchen.at)

2008 **Relaunch**, Institute for Theoretical Physics: [www.itp.tuwien.ac.at](http://www.itp.tuwien.ac.at)

2008-2012 **Relaunch/Admin**, Calendar of Physics Talks Vienna: [www.itp.tuwien.ac.at/CPT](http://www.itp.tuwien.ac.at/CPT)

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## Memberships of Scientific Societies

2017- **Member**, Marie Curie Alumni Association, Spain-Portugal Chapter, Europe

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## Numerical Expertise

Languages C/C++, MPI, OpenMP, Assembler, Streaming SIMD Extensions, OpenGL, Mathematica, AWK, Perl, Python, Java, Maple, Matlab,  $\text{\LaTeX}$ , Gnuplot, FORTRAN, Sh, SQL.

High Cluster usage: MareNostrum of the Barcelona Supercomputing Center, Loewe of the Performance Frankfurt Center for Scientific Computing, VSC of the Vienna Scientific Cluster.

Computing Total Computing Time: 9,2 CPU Terahours

Free Software/  
Open Source Linux kernel developer with more than 100 contributions to Linux, Debian Linux Developer since 2005 [maks@debian.org](mailto:maks@debian.org), Debian and Ubuntu early userspace/boot developer, 2004 Linux Kernel Janitor Maintainer, klibc library developer [maks@kernel.org](mailto:maks@kernel.org).