

LUKAS HOLLENSTEIN – CV

Institut de Physique Théorique
Orme des Merisiers, bat 774
CEA-Saclay, pc 136
91191 Gif-sur-Yvette cedex, France

phone: +33 1 69 08 70 41
fax: +33 1 69 08 81 20
email: lukas.hollenstein@cea.fr
web: lukas.physi.ch

RESEARCH INTERESTS

- Origin of cosmic magnetic fields and their impact on structure formation.
- Probes of linear and nonlinear structure growth as a tool to investigate the nature of cosmic late time acceleration.
- Modified theories of gravity, their stability, viability and detectability.

EMPLOYMENT

- Since 10/12 **Institut de Physique Théorique (IPhT), CEA-Saclay, France**
Postdoctoral researcher. Independent research within the Cosmology and Astroparticles group. Co-supervision of MSc student research projects. Organisation of a cosmology journal club.
- 10/09 – 09/12 **Department of Theoretical Physics, University of Geneva, Switzerland**
Postdoctoral researcher. Independent research within the Geneva Cosmology and Astroparticle physics group. Teaching assistance in theoretical physics. Organisation of seminars and journal clubs.
- 11/05 – 04/06 **Institute for Theoretical Physics, University of Zurich, and
Institute for Theoretical Physics, ETH Zurich, Switzerland**
Research assistant. Independent research in collaboration with Ruth Durrer and Chiara Caprini (both University of Geneva at the time).

EDUCATION

- 10/06 – 09/09 **Institute of Cosmology & Gravitation (ICG), University of Portsmouth, UK**
Ph.D. Cosmology
Thesis: “Applications of Cosmological Perturbation Theory to Dynamical Dark Energy and Primordial Magnetogenesis”
Supervisors: Dr. Robert Crittenden & Prof. Roy Maartens
- 10/2005 **Institute for Theoretical Physics, University of Zurich, Switzerland**
Diploma (research M.Sc.) Physics, theoretical physics
Thesis: “Cosmological Magnetic Fields”
Supervisors: Prof. Daniel Wyler & Prof. Jürg Fröhlich
Grade: 5.5 / 6
- 2000 – 2005 **University of Zurich, Switzerland**
2 years: *Advanced studies in theoretical and experimental physics.* Grade: 5.75 / 6
3 years: *Undergraduate in theoretical and experimental physics, mathematics and subsidiary subject robotics (ETH Zurich).* Grade: 5.67 / 6

 AWARDS & FUNDING

- **Fellowship for advanced researchers, Swiss National Science Foundation** (Dec 2012)
Postdoctoral career development fellowship for research at IPhT, CEA-Saclay, Oct 2013 - Sep 2015. Project title: “Two topical issues in cosmology: dark energy and cosmic magnetic fields”
- **Yggdrasil mobility programme 2012-2013, Research Council of Norway** (May 2012)
Grant over a total of 135'000 NOK to visit the University of Oslo. Project title: “Modified gravity and cosmic magnetic fields in weakly nonlinear structure formation”
- **Fondation Ernst & Lucie Schmidheiny and Fonds Marc Birkigt** (Jul 2010)
Travel grants for the Benasque Workshop on Modern Cosmology 2010.
- **Poster prize at the Faculty Interdisciplinary Research Event, Faculty of Technology of the University of Portsmouth, UK** (Apr 2007)
Title: “Generation of cosmic magnetic fields during structure formation”
- **University Bursary, University of Portsmouth, UK** (Oct 2006)
Three-years fellowship to study for a PhD at the Institute of Cosmology & Gravitation.
- **“Semesterpreis” of the Faculty of Science, University of Zurich, Switzerland** (Jun 2005)
Each semester this prize is awarded to four students for outstanding work, which in my case was the publication: “Dark matter distribution function from non-extensive statistical mechanics.”
- **“SmartROB-Wettbewerb” at the ETH Zurich, Switzerland** (Jul 2003)
Member of the winning team of this robotics competition.

 ACADEMIC SERVICE

Teaching	<p>“Mathematical Methods for Physicists II” <i>Teaching assistant: preparation, supervision & marking of exercises</i>, University of Geneva (spring 2010 & autumn 2011)</p> <p>“Quantum Mechanics II” <i>Teaching assistant: preparation, supervision & marking of exercises</i>, University of Geneva (autumn 2009 & 2010)</p> <p>“Cosmological Perturbations with GRTensorII in Maple” <i>Short Ph.D. lecture</i>, ICG Portsmouth (May 2008 & May 2009)</p>
Organisation	<p>Cosmology Journal Club, CEA-Saclay (since Oct 2012).</p> <p>Cosmology & Particle Physics seminar, University of Geneva (Feb – Jun 2011).</p> <p>Lensing meeting, regular internal meeting, ICG Portsmouth (Oct 2007 – Feb 2009).</p>
Committees	<p>Graduate student representative of the ICG Portsmouth. Reference person for internal matters and member of the <i>Faculty Board</i> and the <i>Faculty Research Degrees Committee</i> (Feb 2008 – Feb 2009).</p> <p>Student representative in the search committee for a full professor in cosmology at the Institute for Theoretical Physics of the University of Zurich (2005).</p>
Outreach / IT	<p>Research group website, complete redevelopment of the website of the Geneva Cosmology and Astroparticle Physics Group using the Drupal CMS (2012).</p> <p>“Champs magnétiques cosmiques”, outreach talk on cosmic magnetic fields at a training event for physics teachers (Jan 2012).</p>

COMPUTING EXPERIENCE

Analytical	I developed <i>Maple</i> worksheets for cosmological perturbations using <i>GRTensorII</i> .
Numerical	I modified <i>CAMB</i> and <i>CosmoMC</i> (CMB-Boltzmann code and likelihood sampling in <i>Fortran90</i>) to include dynamical dark energy models and extract variables in other gauges. I added modules for CMB lensing reconstruction and Fisher matrices.
Object-oriented	Database development in <i>Smalltalk</i> . Realtime image processing in <i>Oberon</i> for a robotics project (see awards).
Other	Mathematica, MATLAB, Python, C/C++, \LaTeX , HTML, JavaScript, PHP, Drupal

PLACEMENTS & OTHER EXPERIENCE

2004	Placement at the Swiss National Bank (Zurich, Switzerland): Object-oriented software/database development in <i>Smalltalk</i> .
2001 – 2006	Self-employed PC supporter for home users.
2000	Zurich Cantonal Bank (Zurich, Switzerland): Accounting clerk in stock exchange administration.

LANGUAGE SKILLS & HOBBIES

Languages	German (native language), Dutch (bilingual), English (fluent in spoken and written), French (advanced in spoken and written), and Spanish (conversant).
Hobbies	I enjoy spending time with my family. I play percussion and drums, go to concerts and listen to music of various genres. I like travelling, outdoor sports and photography.

12th December 2012