

# LUDOVIC SCYBOZ

- » Status: Postdoctoral Research Assistant, Rudolf-Peierls-Centre for Theoretical Physics, University of Oxford
- » Skills: C++, Python, Fortran, Mathematica, FORM, MATLAB, ROOT
- » Interests: Particle Phenomenology, Top/Higgs Physics, Parton Showers
- » Languages: French (native), German & English (full prof.), Italian & Russian (elem.)
- » Activities: Swimming, Skiing, Classical Music/Piano
- » Nationality: Swiss

## Professional Experience

Oct 2020 - now **Fulford Junior Research Fellow** Somerville College, Oxford

Oct 2019 - now **Postdoctoral Research Assistant** University of Oxford

- » Improvements in the formal accuracy of parton showers, PanScales collaboration, Group of Prof. Dr. Gavin Salam
- » Continued involvement in Higgs pair calculations (in particular within the LHC Higgs cross-section working group)
- » Referee for Eur. Phys. J. C

Jul 2019 - Sep 2019 **Postdoctoral Researcher** Max-Planck-Institut für Physik, München

May 2016 - Jul 2019 **Ph.D. Candidate** MPP, München

- » Top-quark mass extraction from  $WWb\bar{b}$  NLO calculations with ATLAS data
- » NLO predictions for  $HH$  production in EFT, NLO off-shell- and parton-shower effects in  $m_t$  measurements
- » ATLAS expert for Herwig7, contact person for physics and computing interface matters

## Education

2016 - 2019 **Ph. D. rer. nat.** TU/MPP, München

- » Final grade: *Summa cum laude*
- » Thesis: Top-Quark Mass Determinations in the  $e\mu$  Dilepton Channel and Top-Quark Mass Effects in Higgs Boson Pair Production (supervised by PD Dr. Stefan Kluth, Prof. Dr. Gudrun Heinrich)

2014 - 2016 **Master's Degree ETH, Physics** ETH Zürich

- » Final grade: 5.88 / 6.00
- » Thesis: Cryogenic Developments for a Low-Energy Muonium Source (supervised by Prof. Dr. Klaus Kirch)  
Lab development of a high-quality  $\mu^+$  implanted in superfluid  $^4\text{He}$

2011 - 2014 **Bachelor's Degree ETH, Physics** ETH Zürich

- » Final grade: 5.61 / 6.00
- » Thesis: The Quantum Hall Effect in Topological Insulators and Superconductors (supervised by Prof. Dr. Gianni Blatter)

2007 - 2011 **Maturité** Collège du Sud, Switzerland

- » Final grade: 6.00 / 6.00
- » *Maturaarbeit*: AI optimisation for chess-playing in endgames

## Teaching Experience

Feb 2020 - now      **Exercise Class Tutor**      University of Oxford

- » SM & Beyond I, Trinity Term 2021
- » Advanced Quantum Field Theory, Hilary Terms 2020 and 2021

Feb 2018 - July 2018      **Teaching Assistant**      Technische Universität München

- » Theoretical Physics I, Mechanics

Feb 2013 - Jan 2016      **Teaching Assistant**      ETH Zürich

- » Analysis I/II, Department of Mathematics and Physics
- » Mathematical Methods for Physics I/II, Department of Mathematics and Physics

Feb 2012 - Feb 2015      **Substitute Teacher**      Collège du Sud, Switzerland

- » Part-time substitute teaching at high-school level in Maths/Applied Maths

## Awards

July 2019      **Summa cum laude, PhD dissertation**      TU München

Dec 2015      **VMP Award for the Best Teaching Assistants**      ETH Zürich

- » Awarded to the six best teaching assistants of the Mathematics and Physics Departments

Jul 2011      **International Chemistry Olympiads, Bronze Medal**      Ankara, Turkey

Jul 2011      **Prizes for best diploma, best FR/DE diploma (Fribourg canton)**      Collège du Sud

Jul 2011      **Prizes for best grade in Maths, best grade in Physics**      Collège du Sud

## Extracurricular

2021      **Outreach: Passport to the Solar System, University of Oxford**

2020-2021      **MCR-JCR-SCR Exchange Forums, Somerville College, Oxford**

2017 - 2018      **Outreach presentations at the MPP Open Days**

2010 - 2011      **Scientific Olympiads in Maths, Physics, Chemistry**

## Selected publications

- » D. de Florian, I. Fabre, G. Heinrich, J. Mazitelli and L. Scyboz, *Anomalous couplings in Higgs-boson pair production at approximate NNLO QCD*, J. High Energ. Phys. **09**, 161 (2021), [2106.14050](#)
- » A. Karlberg, G. Salam, L. Scyboz and R. Verheyen, *Spin correlations in final-state parton showers and jet observables*, Eur. Phys. J. C, **81**, 681 (2021), [2103.16526](#)
- » K. Hamilton, R. Medves, G. Salam, L. Scyboz and G. Soyez, *Colour and logarithmic accuracy in final-state parton showers*, J. High Energ. Phys. **03**, 041 (2021), [2011.10054](#)
- » J. Alison et al., *Higgs boson potential at colliders: Status and perspectives*, Rev. Phys. **05**, 100045 (2020), [1910.00012](#)
- » G. Heinrich, S.P. Jones, M. Kerner and L. Scyboz, *A non-linear EFT description of  $gg \rightarrow HH$  at NLO interfaced to POWHEG*, J. High Energ. Phys. **10**, 021 (2020), [2006.16877](#)
- » G. Heinrich, S.P. Jones, M. Kerner, G. Luisoni and L. Scyboz, *Probing the trilinear Higgs boson coupling in di-Higgs production at NLO QCD including parton shower effects*, J. High Energ. Phys. **06**, 066 (2019), [1903.08137](#)
- » G. Buchalla, M. Capozzi, A. Celis, G. Heinrich and L. Scyboz, *Higgs boson pair production in non-linear Effective Field Theory with full  $m_t$ -dependence at NLO QCD*, J. High Energ. Phys. **09**, 057 (2018), [1806.05162](#)
- » J. R. Andersen et al., *Les Houches 2017: Physics at TeV Colliders Standard Model Working Group Report*, Les Houches, 10<sup>th</sup> Workshop (2017), [1803.07977](#)
- » G. Heinrich, A. Maier, R. Nisius, J. Schlenk, M. Schulze, L. Scyboz and J. Winter, *NLO and off-shell effects in top quark mass determinations*, J. High Energ. Phys. **07**, 129 (2018), [1709.08615](#)
- » ATLAS collaboration, *A study of the sensitivity to the Herwig 7 parameters of  $t\bar{t}$  production measurements in  $pp$  collisions with the ATLAS experiment at the LHC*, ATL-COM-PHYS-2017-1244

## Selected talks

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| » <i>Towards higher-precision parton showers for particle colliders</i> , Sydney-CPPC seminar (online)                           | 21.10.2021 |
| » <i>Subleading colour effects and spin correlations in the PanScales showers</i> , EPS-HEP 2021 (online)                        | 30.07.2021 |
| » <i>Subleading colour effects in the PanScales showers and beyond</i> , PSR 2021 Workshop                                       | 26.05.2021 |
| » <i>Logarithmic accuracy and subleading-<math>N_C</math> corrections in dipole showers</i> , Heavy-Ion Seminar (online), Bergen | 11.03.2021 |
| » <i>An extension for <math>gg \rightarrow HH</math> production at NLO QCD within a non-linear EFT</i> , LHC HH Subgroup Meeting | 07.07.2020 |
| » <i>The Electroweak Chiral Lagrangian and its implementation in Higgs pair production</i> , Dalitz Seminar, Oxford              | 07.11.2019 |
| » <i>Higgs pair production at NLO QCD within a non-linear EFT in POWHEG-BOX</i> , Higgs Couplings 2019, Oxford                   | 02.10.2019 |
| » <i>NLO corrections to Higgs boson pair production in a non-linear EFT</i> , QCD@LHC, Dresden                                   | 28.08.2018 |
| » <i>Higgs boson pair production within a nonlinear EFT</i> , Higgs Hunting, Paris   | 23.07.2018 |
| » <i>NLO-, off-shell and parton shower effects in top quark mass determinations</i> , LHC Top WG, CERN                           | 16.05.2018 |
| » <i>Extraction of the top mass in ATLAS: theory meets experiment</i> , PPSC, Munich   | 26.04.2018 |
| » <i>Upfolding for top mass measurements</i> (part of J. Howarth's talk), Top Workshop 2018, CERN                                | 19.04.2018 |
| » <i>NLO and off-shell effects in top-quark mass determinations</i> , DPG-Tagung, Würzburg                                       | 20.03.2018 |
| » <i>Tuning hadronization parameters in Herwig 7</i> , Top Tunathon, Manchester  | 14.12.2017 |
| » <i>Monte Carlo tuning for <math>t\bar{t}</math> production with Herwig 7</i> , DPG-Tagung, Münster                             | 27.03.2017 |
| » <i>Making use of experimental data: computing and analysis</i> , PPSC, Munich  | 02.12.2016 |