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Academic degrees

Doktor der Naturwissenschaften (Dr. rer. nat.) 24 Sep 2018
RWTH Aachen University, Aachen, Germany
Thesis: Precision Top-Quark Physics with Leptonic Final States
Referees: Prof. Dr. Michal Czakon and Prof. Dr. Robert Harlander

Master of Science (M.Sc.) 30 Sep 2015
Georg-August University, Göttingen, Germany
Thesis: Monte Carlo event generation with the (MC)³ sampling algorithm
Referee: Prof. Dr. Steffen Schumann

Bachelor of Science (B.Sc.) 27 Sep 2013
Georg-August University, Göttingen, Germany
Thesis: Systematic studies on the production of bottom-quarks in parton shower simulations
Referee: Prof. Dr. Steffen Schumann

Employment by academic and scientific institutions

Staff scientist (Adiunkt) Since Oct 2023
Institute of Nuclear Physics Polish Academy of Sciences, Kraków, Poland
Division of Theoretical Physics – Particle Physics

Leverhulme Early Career Fellow Oct 2021 – Sep 2023
Cavendish Laboratory, Cambridge, UK
Theoretical High Energy Physics

Research Associate (PostDoc) Oct 2018 – Sep 2021
Cavendish Laboratory, Cambridge, UK
Theoretical High Energy Physics

Research Assistant (Doctoral student) Oct 2015 – Sep 2018
RWTH Aachen University, Aachen, Germany
Institute for Theoretical Particle Physics and Cosmology
Member of DFG Graduate School (GK)
"Teilchen- und Astroteilchenphysik im Lichte von LHC"

Research grants and funding awards

Research projects where identified as PI

Leverhulme Early Career Fellowship

2021–2023

The ‘NNLO revolution’: pushing the boundary of perturbative QCD.

Awarded by the Leverhulme Trust and the Isaac Newton Trust. (168 kGBP)

Research projects where identified as co-PI

DiRAC RAC - computing resources

2023–2024

Precision LHC Phenomenology

Total volume: 16 MCPU hours.

DiRAC RAC - computing resources

2024–2027

Precision LHC Phenomenology

Total volume: 53 MCPU hours.

Not granted research projects

NCN Sonata Bis 13 Call 2023

High Precision Predictions to Probe the Electroweak-Symmetry-Breaking Mechanism

Total amount: 563,500 EUR

Other awards

Cavendish Laboratory staff reward

2019

(Note: Award of extra pay-grade jump due to extraordinary performance.)

College Research Associate

2021

Emmanuel College, Cambridge

COST ITC conference grant

2024

Participation at ICHEP 2024 conference, 1600 Euro

Teaching

Teaching at IFJ PAN

- 2024: Quantum Field Theory, lecture for PhD students (4x90 mins + exercises).

Teaching at Cambridge University

- 2024: Co-supervision of Louis Christou as Part III student at the Cavendish Laboratory.
- 2023: Supervision of Louis Christou in the summer-student programme of the Cavendish Laboratory.
- 2021-2023: Undergraduate supervision for Physics 1B A (wave-mechanics, quantum mechanics, statistical methods, solid-state physics) at Emmanuel College.
- 2019-2022: Graduate Lecture “HEP computing tools” at the Cavendish Laboratory (2x90 mins + tutorial per year).
- 2019-2022: PhD project co-supervision of Andrei Popescu.
- 2019: Part III project co-supervision of Weijun Li.

Teaching at RWTH Aachen University

- Summer term 2016: exercise classes for “Relativistic quantum mechanics” (graduate course)
- Winter term 2016/17: Tutor for “Theoretische Physik 0” (undergraduate course, mathematical methods for theoretical physics)

- Summer term 2017: Tutor for "Theoretische Physik I: Mechanik" (undergraduate course, classical mechanics)
- Winter term 2017/18: Tutor for "Statistische Mechanik" (undergraduate course, statistical physics)

Teaching at the University of Göttingen

- Winter term 2012/13: tutor for "Analytische Mechanik" (undergraduate course, classical mechanics)
- Summer term 2013: tutor for "Physik II" (undergraduate course, electrodynamics)
- Winter term 2013/14: tutor for "Mathematische Methoden der Physik II" (undergraduate course, mathematical methods for physics)
- Summer term 2014: tutor for "Quantenmechanik I" (undergraduate course, quantum mechanics)
- Winter term 2014/2015: tutor for "Rechenmethoden der Physik" (undergraduate course, mathematical methods for physics)
- Summer term 2015: tutor for "Analytische Mechanik" (undergraduate course, classical mechanics)

Other

- Sep 2023: Maria Laach Herbstschule, Maria Laach, Germany, theory coordinator

Publications

Below are various metrics of scientific output and citations as provided by the InSpire HEP database. The database considers pre-prints published on ArXiv and other online repositories citable works. Works marked "published" have undergone a rigorous peer-reviewing process.

Date: 15 May 2024

InSpire HEP Profile: <https://inspirehep.net/authors/1812055>

| | |
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| Published works (JCR-indexed journals) | 21 |
| Citable works | 33 |
| Total citations (excluding self-citations) for JCR works | 820 (675) |
| Total citations (excluding self-citations) for citable works | 878 (707) |
| h-index (JCR works) | 16 (14) |
| h-index (citable works) | 17 (14) |

Journal Articles

1. **Measurement of the production cross section for a W boson in association with a charm quark in proton-proton collisions at $\sqrt{s} = 13$ TeV**,
CMS Collaboration et al.,
Eur.Phys.J.C 84 (2024), 27
2. **Isolated photon production in association with a jet pair through next-to-next-to-leading order in QCD**,
S. Badger, M. Czakon, B. Hartanto, R. Moodie, T. Peraro, **R. Poncelet**, S. Zoia,
JHEP 10 (2023) 071
3. **NNLO QCD corrections to event shapes at the LHC**,
M. Alvarez, J. Cantero, M. Czakon, J. Llorente, A. Mitov, **R. Poncelet**,
JHEP 03 (2023) 129
4. **A detailed investigation of W+c-jet at the LHC**,
M. Czakon, A. Mitov, M. Pellen, **R. Poncelet**,
JHEP 02 (2023) 241
5. **NNLO B-fragmentation fits and their application to $t\bar{t}$ production and decay at the LHC**, M. Czakon, T. Generet, A. Mitov, **R. Poncelet**,
JHEP03 (2023) 251
6. **NNLO QCD corrections to $Wb\bar{b}$ production at the LHC**
H. Bayu Hartanto, **R. Poncelet**, A. Popescu, S. Zoia,

7. **Infrared-safe flavoured anti- k_T jets**,
M. Czakon, A. Mitov, **R. Poncelet**,
JHEP 04 (2023), 138
8. **Angular coefficients in W+j production at the LHC with high precision**
M. Pellen, **R. Poncelet**, A. Popescu, T. Vitos,
Eur.Phys.J.C 82 (2022) 8, 693
9. **Polarised W+j production at the LHC: a study at NNLO QCD accuracy**,
M. Pellen, **R. Poncelet**, A. Popescu,
JHEP 02 (2022) 160
10. **Next-to-Next-to-Leading Order Study of Three-Jet Production at the LHC**,
M. Czakon, A. Mitov, **R. Poncelet**,
Phys.Rev.Lett. 127 (2021) 15, 152001
11. **NNLO QCD corrections to diphoton production with an additional jet at the LHC**,
H. Chawdhry, M. Czakon, A. Mitov, **R. Poncelet**,
JHEP 09 (2021) 093
12. **Two-loop leading-colour QCD helicity amplitudes for two-photon plus jet production at the LHC**,
H. Chawdhry, M. Czakon, A. Mitov, **R. Poncelet**,
JHEP 07 (2021) 164
13. **NNLO QCD study of polarised W^+W^- production at the LHC**,
R. Poncelet, A. Popescu,
JHEP 07 (2021) 023
14. **B-hadron hadro-production in NNLO QCD: application to LHC $t\bar{t}$ events with leptonic decays**, M. Czakon, T. Generet, A. Mitov, **R. Poncelet**,
JHEP 10 (2021) 216
15. **Two-loop leading-color helicity amplitudes for three-photon production at the LHC**,
H. Chawdhry, M. Czakon, A. Mitov, **R. Poncelet**,
JHEP 06 (2021) 150
16. **NNLO QCD predictions for W+c-jet production at the LHC**,
M. Czakon, A. Mitov, M. Pellen, **R. Poncelet**,
JHEP 06 (2021) 100
17. **NNLO QCD corrections to leptonic observables in top-quark pair production and decay**,
M. Czakon, A. Mitov, **R. Poncelet**,
JHEP 05 (2021) 212
18. **NNLO QCD corrections to three-photon production at the LHC**,
H. Chawdhry, M. Czakon, A. Mitov, **R. Poncelet**,
JHEP 02 (2020) 057
19. **Single-jet inclusive rates with exact color at $\mathcal{O}(\alpha_s^4)$** ,
M. Czakon, A. van Hameren, A. Mitov, **R. Poncelet**,
JHEP 10 (2019) 262
20. **Higher order corrections to spin correlations in top quark pair production at the LHC**,
A. Behring, M. Czakon, A. Mitov, A. Papanastasiou, **R. Poncelet**,
Phys. Rev. Lett. 123 (2019) no.8, 082001
21. **Polarized double-virtual amplitudes for heavy-quark pair production**,
L. Chen, M. Czakon, **R. Poncelet**,
JHEP 03 (2018) 085

Proceedings, community efforts and other publications

1. **High-precision prediction for multi-scale processes at the LHC**,
R. Poncelet,
e-Print: 2405.01330 [hep-ph]

2. **Top-Bottom Interference Contribution to Fully-Inclusive Higgs Production**,
M. Czakon, F. Eschment, M. Niggetiedt, **R. Poncelet**, T. Schellenberger,
e-Print: 2312.09896 [hep-ph], *Accepted in PRL*.
3. **HighTEA: High energy Theory Event Analyser**,
M. Czakon, Z. Kassabov, A. Mitov, **R. Poncelet**, A. Popescu,
2304.05993 [hep-ph], *Submitted to Journal of Physics G: Nuclear and Particle Physics*
4. **Precision comparisons between theory and data in $t\bar{t}$ -production at the LHC**,
R. Poncelet,
e-Print: 2212.06019 [hep-ph]
5. **Report of the Topical Group on Top quark physics and heavy flavor production for Snowmass 2021**,
K. Agashe et al. ,
e-Print: 2209.11267 [hep-ph]
6. **Flavour anti- k_T algorithm applied to $Wb\bar{b}$ production at the LHC**,
B. Hartanto, **R. Poncelet**, A. Popescu, S. Zoia,
e-Print: 2209.03280 [hep-ph]
7. **Snowmass White Paper: prospects for the measurement of top-quark couplings**,
G. Durieux, A. Gutiérrez Camacho, L. Mantani, V. Miralles, M. Miralles López, M. Llácer Moreno,
R. Poncelet, E. Vryonidou, M. Vos,
e-Print: 2205.02140 [hep-ph]
8. **NNLO QCD study of polarised W^+W^- production at the LHC**,
A. Popescu, **R. Poncelet**,
PoS LHCP2021 (2021), 211
9. **W +c-jet production at the LHC with NNLO QCD accuracy**,
M. Czakon, A. Mitov, M. Pellen, **R. Poncelet**,
e-Print: 2110.05104 [hep-ph]
10. **NNLO QCD Calculations with the Sector-improved Residue Subtraction Scheme**,
R. Poncelet,
Acta Phys. Polon. B 51 (2020), 1503
11. **Sector-improved residue subtraction: Improvements and Applications**,
A. Behring, M. Czakon, **R. Poncelet**,
PoS LL2018 (2018), 024
12. **Precision Top-Quark physics with leptonic final states**,
R. Poncelet,
RWTH Aachen publications (2018)

Scientific, organizational, and popularization activity

Service and organization work

Conference and workshop organization:

- 2024/7: ICHEP, convener of "Top+EW" session.
- 2024/5: SM@LHC, convener of "Top-quark" session.
- 2023/11: Local organization committee and social chair of "Polish Particle and Nuclear Physics Summit (2PiNTS)" workshop at IFJ PAN Kraków
- 2023/9: QCD@LHC23, convener of "Processes with heavy quarks" session.
- 2023/3: DIS2023, convener of WG4 "QCD and heavy flavor".

Seminar organization:

- Since 2024: Co-organizer of COMETA Colloquium series.
- 2020–2023: Organizer of the DAMPT-Cavendish Joint Seminar Series.

Other:

- Since 2024: Polish representative in COMETA Management Committee (COST action <https://www.cost.eu/actions/CA22130/>)

Journal refereeing:

- Since 2021: EPJC
- Since 2021: JHEP
- Since 2023: SciPost

Scientific outreach activities

- 2024/5: Dzień Otwarty IFJ PAN dla studentów 2024, Kraków.
Poster: "Normalising Flows for Phasespace Integration".
- 2023/7: Public Engagement workshop, The Science Museum, London.
Introduction To Public Engagement, a course organized by DiRAC.
- 2023/5: Isaac Newton Trust Fellows' Event, Cambridge University, Cambridge.
Public talk to the general public: "Exploring Quantum Effects at the Terascale".
- 2021/3: Engaged Researcher Online, Cambridge University, Cambridge.
Introduction To Public Engagement, course at the University of Cambridge.
- 2018/6: Science Fair, Wirsberg Gymnasium, Würzburg.
Scientific contact for student feedback and advice on project design and result analysis.

Other activity

- 2023/6: PhysTev 23, workshop in Les Houches.
- 2022/8: MIAPbP workshop: Gearing up for high-precision LHC physics.
- 2022/6: DiRAC workshop: Accelerated Computing with Cuda.
- 2021/2: DiRAC workshop: DiRAC AI-athon.
- 2016/7: CTEQ - MCnet School at DESY.
- 2015/4: Helmholtz Alliance Monte-Carlo School at DESY.
- 2013/7: Summer student at DESY, supervisor: Simon Plätzer.
- 2013/2: Helmholtz Alliance Introduction to the Terascale at DESY.

Academic presentations

Invited colloquia at university and laboratories

1. **Precision QCD phenomenology for multi-scale processes at the Large Hadron Collider**, Kraków, IFJ PAN, 2024.04.25
2. **Jet identification and flavoured jet algorithms**, Aachen, RTG colloquium, 2023.04.18

Presentations at national and international conferences

1. **Polarized predictions in diboson final states**, Rome, SM@LHC, 2024.05.09
2. **Precise polarisation predictions**, Izmir, COMETA 1st General Meeting, 2024.02.28
3. **High precision prediction for multi-scale processes at the LHC**, Kraków, XXX Epiphany Conference, 2024.01.08

4. **N(N)LO 3-jet predictions**,
FermiLab (remote), SM@LHC, 2023.07.10
5. **NNLO QCD corrections to event-shapes at the LHC**,
Crieff, RadCor, 2023.05.30
6. **Precision phenomenology with multi-jet final states at the LHC**,
MSU, DIS, 2023.03.30
7. **NNLO QCD corrections to W+2 b-jet production**,
Paris, QCD@LHC, 2022.11.28
8. **Jet calculations with the Sector-improved residue subtraction scheme**,
Newcastle, HP2, 2022.09.21
9. **Precision comparisons between theory and data in ttbar production at the LHC**,
Durham, TOP, 2022.09.05
10. **Polarization modelling in MBI processes / Precision Predictions for Polarized Electroweak Bosons**,
Shanghai (remote), MBI, 2022.08.22
11. **Progress on precision QCD calculations**,
Taipei (remote), LHCP, 2022.05.19
12. **Status of (N)NNLO calculations**,
CERN, SM@LHC, 2022.04.13
13. **NNLO QCD corrections for three-jet production**,
La Thuile, Moriond, 2022.03.24
14. **NNLO QCD predictions for 2 to 3 processes**,
Tallahassee (remote), RadCor+LoopFest, 2021.05.21
15. **NNLO QCD corrections to top-quark production and decay**,
Durham (remote), TOP, 2020.09.14
16. **NNLO QCD calculations with the Sector-improved residue subtraction scheme**,
Kraków, Epiphany Conference, 2020.01.10
17. **Towards 2 \rightarrow 3 NNLO QCD calculations**,
Avignon, RadCor, 2019.09.10
18. **State-of-the-art precision calculations for top quark production and decay**,
Puebla, LHCP, 2019.05.16
19. **Top production at the LHC**,
Torino, DIS, 2019.04.09
20. **NNLO QCD top quark pair production and decay**,
Bad Neuenahr, TOP, 2018.09.17
21. **NNLO predictions for top-quark pair production with leptonic final states**,
MSU, LoopFest, 2018.07.19
22. **Towards top-quark pair production and decay at NNLO QCD**,
St. Gilgen, RadCor, 2017.09.27
23. **Improvements of the sector-improved residue subtraction scheme**,
Debrecen, QCD@LHC, 2017.08.29
24. **Polarised amplitudes for top quark pair production at NNLO**,
Münster, DPG, 2017.03.27
25. **NLO event generation with the (MC)3 sampling algorithm**,
Hamburg, DPG, 2016.03.01

Invited seminars

1. **Techniques and phenomenology of NNLO QCD calculations for LHC processes**,
Hamburg, DESY Theory seminar, 2024.04.15
2. **Precision phenomenology with heavy-flavour jets at the LHC**,
Warsaw, NCBJ, 2024.04.09

3. **Techniques and phenomenology of cutting-edge higher-order calculations for LHC processes**,
Göttingen, Georg-August University, 2023.12.18
4. **Techniques and phenomenology of cutting-edge higher-order calculations for LHC processes**,
Kraków, AGH, 2023.12.15
5. **Precision phenomenology with heavy-flavour jets at the LHC**,
Kraków, Jagiellonian University, 2023.12.05
6. **High-precision calculations for W+charm at the LHC**,
DESY Zeuthen, 2023.11.02
7. **Precision phenomenology with heavy-flavour jets at the LHC**,
CERN, QCD seminar, 2023.10.23
8. **Precision Predictions for Polarized Electroweak Bosons**,
Kraków, IFJ theory division seminar, 2023.10.12
9. **Precision phenomenology with multi-jet final states at the LHC**,
Milano Bicocca, 2023.09.22
10. **Precision phenomenology with multi-jet final states at the LHC**,
Torino, INFN, 2023.03.22
11. **Precision phenomenology with multi-jet final states at the LHC**,
Kraków, IFJ particle physics theory department seminar, 2023.03.20
12. **Precision Predictions for Polarized Electroweak Bosons**,
Würzburg, 2023.01.19
13. **NNLO QCD corrections to W+2 b-jet production**,
Zürich, UZH, 2022.09.27
14. **Tasty jets at the LHC**,
Munich, MPI, 2022.07.01
15. **Jets at the LHC: a fixed order perspective**,
Freiburg, 2022.05.17
16. **HighTEA**,
Cambridge, Cavendish-DAMPT, 2022.02.04
17. **Jets at the LHC: a fixed order perspective**,
University of Sussex, 2021.10.25
18. **NNLO QCD predictions for 2 to 3 processes**,
CERN (remote), QCD-seminar, 2021.06.18
19. **Three photon production at the LHC: Amplitudes and Phenomenology**,
Milano Bicocca, 2020.02.19
20. **Three photon production at the LHC: Amplitudes and Phenomenology**,
Oxford, 2020.02.13
21. **Spin correlation in top-quark pair production in the 'precision'-era of the LHC**,
Dortmund, 2019.07.01
22. **Fixed-order predictions for top-quark pair production and decay at the LHC**,
Cambridge, Cavendish-DAMPT, 2019.05.16
23. **Improvements of the sector-improved residue subtraction scheme**,
Zürich, ETH, 2018.03.20
24. **NNLO QCD calculations with the sector-improved residue subtraction scheme**,
Würzburg, 2017.11.30
25. **Improvements of the sector-improved residue subtraction scheme**,
Freiburg, 2017.11.21

Presentations at workshops and working group meetings

1. **VLVL: Precision Predictions for Polarized Electroweak Bosons**,
COMETA online meeting WG1, 2024.01.17
2. **Fixed-order calculations with massive quarks**,
Edinburgh, Heavy Flavour At High PTs, 2023.11.30
3. **High precision prediction for multi-scale processes at the LHC**,
Kraków, 2PiNTS, 2023.11.22
4. **HighTEA**,
Les Houches, 2023.06.16
5. **Flavour anti-kT**,
Les Houches, 2023.06.14
6. **Isolated photon production in association with a jet pair through next-to-next-to-leading order in QCD**,
ATLAS PDF Forum (remote), 2023.05.26
7. **HighTEA**,
CMS TOP WG (remote), 2022.12.13
8. **Combined tt and tW analyses**,
ATLAS TOP WG (remote), 2022.11.17
9. **Infrared-safe flavoured anti-kT jets**,
ATLAS PDF Forum (remote), 2022.05.13
10. **NNLO QCD predictions for jet observables**,
CMS hadronic workshop, 2022.02.24
11. **NNLO predictions for three-jet cross sections at the LHC**,
LHC EW WG general meeting, 2022.02.15
12. **NNLO predictions for three-jet cross sections at the LHC**,
LHC EW WG, 2021.11.29
13. **Precision predictions for jet rates**,
CERN (remote), Jets And Their Substructure, 2021.05.31
14. **Predictions for ttbar differential cross sections**,
CMS TOP WG, 2019.11.20
15. **NNLO predictions for ttbar spin correlations**,
CERN TOP WG, 2018.11.21
16. **ttbar production and decay at NNLO QCD**,
Bad Honnef, GK report week, 2016.08.30

Other presentations

1. **Spin correlation in top-quark pair production**,
CERN, collider cross-talk, 2022.07.21
2. **Precision Top-Quark Physics with Leptonic Final States**,
Aachen, PhD defense, 2018.09.24