

Nicolas Deutschmann

Curriculum vitae

Personal information

Nationality: French
Age: 25

Contact

Domaine scientifique de la
Doua
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Publications

Number: 4
h-index: 2

Languages

French: Mother tongue
English: fluent
German & Spanish:
basic conversation

Research experience

Since September 2013

PhD Student

IPN Lyon, France & CP3 Louvain, Belgium

Model building and phenomenology for the LHC
Supervised by Aldo Deandrea and Fabio Maltoni

April–July 2013

Master thesis internship (full-time research)

IPN Lyon, France

Effective Models with Spherical Orbifolds
with Aldo Deandrea
Defended in August 2013

May–July 2012

Master internship (full-time research)

CP3 Louvain-la-Neuve, Belgique

Trileptons at the LHC, in the Standard Model and beyond
with Fabio Maltoni
Defended in August 2012

Education

2017

PhD in physics

Université de Lyon & Université catholique de Louvain

Graduation: July to September 2017

2013

MSc in fundamental physics

École normale supérieure de Lyon, France

Theoretical Physics
Highest honors

2011

BSc in physics

École normale supérieure de Lyon, France

Highest honors

Publications

Research

2016

Towards Kaluza-Klein Dark Matter on nilmanifolds

JHEP 1606 (2016) 169

D. Andriot, G. Cacciapaglia, A. Deandrea, N. Deutschmann, D. Tsimpis

2016

Dark matter and localised fermions from spherical orbifolds?

JHEP 1604 (2016) 083

G. Cacciapaglia, A. Deandrea, N. Deutschmann

2014

Multi-tops at the LHC

JHEP 1408 (2014) 134

A. Deandrea, N. Deutschmann

2013

Simulating spin-3/2 particles at colliders

European Physical Journal C73 (2013) 2580

N. D. Christensen, P. de Aquino, N. Deutschmann, C. Duhr, B. Fuks, C. Garcia-Cely,
O. Mattelaer, K. Mawatari, B. Oehl, Y. Takaesu

Outreach

2016

Compact Extra Dimensions in Quantum Mechanics

arXiv:1611.01026

N. Deutschmann

Conferences & seminars

5 December 2016

Higgs production in the SMEFT at NLO – presentation

South Africa

Accepted contribution to Kruger Conference 2016

26 January 2016

Dark Matter from Spherical Extra-Dimensions – presentation

LAPTh Annecy,

France

Rencontres de Physique des Particules 2016

17 December 2015

Toward Higgs pair production at NLO – Poster

Louvain-la-Neuve, Belgium

"When the M meets the P at IRMP"

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|-----------------|---|---------------------------|
| 16 January 2015 | Multi-top production at the LHC – Poster Rencontres de Physique des Particules 2015 | IHP Paris, France |
| 22 July 2014 | Curved extra-dimensions – presentation Invited seminar | NITheP WITS, South Africa |
| 20 January 2014 | Curved Extra Dimensions – presentation Rencontres de Physique des Particules 2014 | IPHC Strasbourg, France |

Teaching experience

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| Since September 2015 | Teaching assistant Introduction to QCD: exercise classes (6h) Intro. physics for biologists: exercise classes & labs for 3 semesters (72h) General Physics: exercise classes for 1 semester (31h) Documentary research: computer labs for 1 semester (9h) | Université de Lyon 1, France |
| Fall 2013 | Teaching assistant Physics laboratory for 1 semester (15h) | IUT de Chimie de Lyon, France |

Research trips

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| October 2016 | KIAS & IBS Two-week visit. Collaboration with T. Flacke and J.S. Kim | Seoul & Daejeon, South Korea |
| July 2014 | Witwatersrand University Two-week visit. Seminar given. Collaboration with A. Cornell | Johannesburg, South Africa |

Skills

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| Particle Phenomenology | Madgraph5_aMC@NLO, FeynRules, MadAnalysis5, CalcHEP |
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- Monte Carlo collider simulations
- Efficient BSM model implementation
- Recasting complex collider analyses
- Dark Matter relic density calculations with coannihilations

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| Multi-loop computations | Mathematica, LiteRed, FIRE5, ASY, FIESTA, QGRAF, FORM |
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- Generating and reducing multi-loop amplitudes using Integration-By-Parts identities
- Modern methods for direct loop integrations (multiple polylogarithms, coproducts,...)
- Expansion methods for EFT matching (expansion by region)

Programming

- Programming languages: Python, C++, C, Bash
- Computer Algebra: Mathematica, FORM
- Web: HTML, XML, CSS, Bootstrap, Pelican

Graduate-level training

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| October 2015 | School of Analytic Computing in Theoretical High-Energy Physics Atrani, Italy |
| August 2015 | MCnet School Spa, Belgium |
| June 2015 | HiggsTools Annual School Courmayeur, Italy |
| June 2014 | TASI University of Colorado, Boulder, USA |
| Fall 2014 | EFTx EDX MIT lectures Online course on effective field theories (ChPT, SMEFT, HQET, SCET) |
| April 2013 | School on Particle Physics in the LHC Era ICTP-SAIFR, São Paulo, Brazil |