

Nicolas Deutschmann, PhD

🇫🇷 French citizen (B Permit) 📅 28 years old 📍 Zurich, CH
✉ nicolas.deutschmann@gmail.com 📞 079 799 6451
🌐 github.com/nddeutschmann



WORK EXPERIENCE

ETH Zurich - Institute for Theoretical Physics

Oct. 2017 – Present

Postdoctoral Fellow

Zurich, CH

- Development and exploratory study of neural-network-powered Monte Carlo integration tools in TensorFlow
 - Supervision of a Master thesis (Spring 2020)
- Design and development of **MadNkL0**, a modern particle physics simulation program for the LHC
 - Analytic/mathematical calculations and implementation of the results in Python
 - Design of new approaches for future simulations
 - Contribution to core design and development
- Study of particle processes at the LHC
 - Supervision of a PhD student for a project on Higgs boson physics
- Teaching and student supervision: 2 Master student proseminar projects per year

Université de Lyon - Institute for Nuclear Physics

Sept. 2013 – Sept. 2017

PhD Candidate/Teaching assistant

Lyon, FR - Louvain, BE - Geneva (CERN), CH

- Computation of integrals for Higgs physics at the LHC using modern algebraic techniques
- Statistical analyses comparing particle physics models to experiments
- Development and study of models for Dark Matter
- Teaching BSc and MSc-level exercise classes

EDUCATION

Université de Lyon, Université Catholique de Louvain

Sept. 2017

PhD in Physics

Lyon, FR - Louvain, BE - Geneva (CERN), CH

- Joint PhD program with Prof. Aldo Deandrea in Lyon, Prof. Fabio Maltoni in Louvain
- Spent two years in Lyon, one in Louvain, and one sharing time between Lyon and CERN
- Took part to five international PhD training schools

École Normale Supérieure de Lyon

Aug. 2013

MSc in Theoretical Physics - Highest Honors (Mention Très Bien)

Lyon, FR

École Normale Supérieure de Lyon

Aug. 2011

BSc in Physics - Highest Honors (Mention Très Bien)

Lyon, FR

Lycée Kléber - Classe Prépa

Aug. 2010

MP (Math-Physics double major equivalent to the first two BSc years - no honors system)*

Strasbourg, FR

SKILLS & INTERESTS

- **Skills:** physics, mathematics, modelling, statistics, machine learning, experiment design, writing research papers
- **Programming Languages:** python (proficient), mathematica (proficient), C/C++ (beginner)
- **Tools/Frameworks:** numpy, tensorflow, git, docker, latex
- **Languages:** French (mother tongue), English (fluent), German (B1/B2), Chinese & Spanish (A1/A2)
- **Interests:** Hiking, flight simulation, science outreach

PUBLICATIONS

Particle physics convention: alphabetic author order

- **Momentum mappings for subtractions at higher orders in QCD** Oct. 2019
V. Del Duca, N. Deutschmann, S. Lionetti
Submitted to JHEP, arXiv:1910.01024
- **Top-Yukawa contributions to bbH production at the LHC** Aug. 2018
N. Deutschmann, F. Maltoni, M. Wiesemann, M. Zaro
JHEP 1907 (2019) 054, arXiv:1808.01660
- **Gluon-fusion Higgs production in the Standard Model EFT** Aug. 2017
N. Deutschmann, C. Duhr, F. Maltoni, E. Vryonidou
JHEP 1712 (2017) 063, arXiv:1708.00460
- **Current LHC Constraints on Minimal Universal Extra Dimensions** Feb. 2017
N. Deutschmann, T. Flacke, J. S. Kim
Phys.Lett. B771 (2017) 515-520, arXiv:1702.00410
- **Towards Kaluza-Klein Dark Matter on Nilmanifolds** Mar. 2016
D. Andriot, G. Cacciapaglia, A. Deandrea, N. Deutschmann, D. Tsimpis
JHEP 1606 (2016) 169, arXiv:1603.02289
- **Dark matter and localised fermions from spherical orbifolds?** Jan. 2016
G. Cacciapaglia, A. Deandrea, N. Deutschmann
JHEP 1604 (2016) 083, arXiv:1601.00081
- **Multi-tops at the LHC** May 2014
A. Deandrea, N. Deutschmann
JHEP 1408 (2014) 134, arXiv:1405.6119
- **Simulating spin-3/2 particles at colliders** Aug. 2018
N. Christensen, P. de Aquino, N. Deutschmann, C. Duhr, B. Fuks, C. Garcia-Cely, O. Mattelaer, K. Mawatari, B. Oehl, Y. Takaesu
Eur.Phys.J. C73 (2013) 10, 2580, arXiv:1308.1668

TALKS AT CONFERENCES

- **Associated bbH production (Invited)** Nov. 2018
Amplitudes in the LHC era, GGI Florence, IT
- **Higher order corrections to Higgs processes (Invited)** Jul. 2017
Higgs Hunting, LAL Orsay, FR
- **Higgs production at NLO in the SMEFT (Invited)** May 2017
LoopFest, Argonne National Laboratory, USA
- **Higgs production at NLO in the SMEFT** Apr. 2017
Rencontres de physique des particules, CPT Marseille, FR
- **Higgs production in the SMEFT at NLO (Invited)** Dec. 2017
Kruger Conference, Kruger National Park, ZA
- **Dark Matter from Spherical Extra-Dimensions** Jan. 2016
Rencontres de physique des particules, LAPTH Annecy, FR
- **Curved Extra Dimensions** Jan. 2014
Rencontres de physique des particules, IPHC Strasbourg, FR