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Julian Bitterwolf

Education

2014 **MSc Mathematics**, *École Polytechnique & Université Paris Sud 11*, Palaiseau/Orsay, FR, avg. grade: *15.3/20*.
Program: "Mathematics: Analysis, Arithmetics and Geometry"

2017 **BSc Mathematics**, *Karlsruhe Institute of Technology*, Karlsruhe, DE, *1.1*.
Bachelor in Mathematics. Thesis on "Models for Synthetic Differential Geometry" with supervisors Prof. F. Herrlich and Dr. Felix Wellen, Institute of Algebra and Geometry

2015 **BSc Physics**, *Karlsruhe Institute of Technology*, Karlsruhe, DE, *1.3*.
Bachelor in Physics with minor in Buisiness Administration. Thesis with the title "Path Integration via Infinitesimal Complex Time Phases" on instantons with supervisors Prof. J. Schmalian and Dipl.-Phys. Pia Gagel, Institute for Theoretical Condensed Matter Physics

2012-2013 **Erasmus Year**, *École Polytechnique*, Palaiseau.
3rd year of EP's mathematics program. Final presentations on representation theory and quantum groups

2009 **Abitur**, *Lessing-Gymnasium*, Karlsruhe, *1.4*.

Master thesis

title **The Eilenberg-MacLane Theorem for Simplicial Sheaves**

supervisor Prof. Dr. Fabien Morel, LMU München

description In this work, I showed that the result $H^n(X, M) \cong [X, K(M, n)]$, linking cohomology and homotopy, does not only hold in the classical context where X is a simplicial set and M an abelian group with its Eilenberg-MacLane space $K(M, n)$, but also in the generalization of X as a simplicial sheaf and M as a sheaf of abelian groups.

Experience

Vocational

2017- **Research Assistant**, *Research Center for Information Technology (FZI), in the SIM group*, Karlsruhe, DE.
Research on the influence of environmental effects on deep learning models for image recognition in autonomous driving

2015, 2016, 2017 **Lecturer: Preparatory course in physics for geodesy and transportation management/civil engineering/economics**, *Karlsruhe University of Applied Sciences*, Karlsruhe, DE.
Preparing and holding a week of introductory physics lectures for beginning students.

2017 **Lecturer: Preparatory course in mathematics for economics**.

2009–2010 **Combat Signaller**, *Command Support Battalion 291 of the Bundeswehr*, Sigmaringen, DE, Obligatory military service in the German armed forces, including basic military training and training as an IT-soldier.

Miscellaneous

2016 **Gap Year**, TH, LA, KH, MY, ID, SG.
Travelling Asia, learning a lot about different cultures, life in challenging circumstances, extreme weather situations, and myself

2016 **Dive Master**, *Scuba Junkie Komodo*, Flores, ID.
Six week internship program, leading to the PADI Dive Master certification which qualifies for working as diving group leader

2011–2015 **Secretary of Hector-Seminar-Alumni e.V.**, Heidelberg, DE.

2011–2012 **IT System Administrator**, *for the research group Number Theory and Algebraic Geometry, Institute of Algebra and Geometry, KIT*, Karlsruhe, DE.

2010–2011 **Tutor**, *Institute of Algebra and Geometry, KIT*, Karlsruhe, DE.
Holding a tutorial accompanying the lecture "Linear Algebra and Analytic Geometry I" by Prof. D. Hug and Prof. W. Tuschmann.

2008 **Project leader on human flows measurement**, *Hector-Seminar*, Karlsruhe, DE.
Conceptualizing, planning, organizing and executing a 5-month weekly project for 18 participants.

Languages

German *native speaker* English *fluent* French *very good command*

Computer skills

Programming	C++, Python	Graphics	Inkscape, GIMP, OpenCV
Office	LaTeX, LibreOffice	Calculation	Pytorch, TensorFlow,
Proving	Isabelle, Lean, Coq		Numpy, MATLAB

Prizes, honours and extracurricular education

2018 Scholar at the **School of AI** at Pi School in Rome, IT. I worked on a project commissioned by the Agency for Digital Italy on the identification of cultural heritage items given a photo and contextual information.

2017 Participant at the EUTypes Summer School in Ohrid, MK

2012 – 2013 **Deutschlandstipendium**

2002 – 2009 Participant of the **Hector-Seminar**, a weekly seminar class on mathematics, computer science, natural science and technology, for selected highly gifted pupils.

2009 Second place in the regional **Jugend forscht**-competition with the chemistry project „Nitration of toluene – challenging poorly documented school book statements“

2007 Invited participant at a workshop on spacetime descriptions within the Deutsche Schülerakademie with a talk on gravitational waves

Publications

J. Bitterwolf, E. Rusak, S. Reiter, A. Viehl, and O. Bringmann. An artificial neural network for automated fault detection. Submitted to *Information Technologies for Intelligent Decision Making Support,* Ufa, Russia, May 2018.