

CURRICULUM VITAE

DR. RER. NAT. MARTIN BIES



PERSONAL DETAILS

Address: Université libre Bruxelles
Campus Plaine, Buidling NO, Office O.6.111
Email: Martin.Bies@ulb.ac.be
Nationality: German
Date of birth: 15/12/1987

SUMMARY

Education **PhD in Physics** (Heidelberg university – defended on 01/02/2018)
Past research **String theory – development of mathematical software** (via **GitHub** and including **machine learning**) and **computation of massless spectra**
Teaching experience Tutor for 8 lecture courses (since Oct. 2012)
Senior Tutor in 2016 and 2018
Language skills German – mother tongue
English – fluent (Imperial College International Diploma)
French – Basic knowledge
Scholarships **FWA – Foundation Wiener-Anspach** (since Oct. 2018)
Studienstiftung des deutschen Volkes (Jan. 2010 – Feb. 2018)

PROFESSIONAL EXPERIENCE

Since Oct. 2018 Postdoctoral Researcher
Physique Théorique et Mathématique, Université Libre de Bruxelles
Feb. 2018 – Sept. 2018 Postdoctoral Researcher
Institut für theoretische Physik, Ruprecht-Karls-Universität Heidelberg

EDUCATION

Mar. 2014 – Feb. 2018 PhD studies in physics (Heidelberg university) on the subject
Cohomologies of coherent sheaves and massless spectra in F-theory
Supervisor physics: Prof. Dr. Timo Weigand (Uni. Heidelberg)
Supervisor mathematics: Prof. Dr. Mohamed Barakat (Uni. Siegen)
Result: Magna cum laude (very good)
Sept. 2012 – Feb. 2014 Master studies in physics (Heidelberg university) on the subject
Cohomologies of holomorphic line bundles in smooth and compact normal toric varieties
Supervisor: Prof. Dr. Timo Weigand
Result: 1.0
Oct. 2008 – Aug. 2012 Bachelor studies in physics (Heidelberg university) on the subject
Intersecting D6-brane models on $T^2 \times T^2 \times T^2/(\sigma \times \Omega)$ and $T^2 \times T^2 \times T^2/(\mathbb{Z}_2 \times \mathbb{Z}_2 \times \sigma \times \Omega)$ orientifolds
Supervisor: Prof. Dr. Timo Weigand
Result: 1.1
Oct. 2010 – June 2011 Studies abroad at Imperial College (London, United Kingdom)

SOFTWARE DEVELOPMENT

As part of the *homalg_project* of the mathematician *Mohamed Barakat* (*Siegen university*), I maintain among others the following **GAP**-packages on my *GitHub*-site <https://github.com/HereAround>:

- CAPCategoryOfProjectiveGradedModules
- CAPPresentationCategory
- PresentationsByProjectiveGradedModules
- TruncationsOfPresentationsByProjectiveGradedModules
- SheafCohomologyOnToricVarieties

SCIENTIFIC PUBLICATIONS

- *Tensor products of finitely presented functors* (arXiv-ID: 1909.00172)
Collaborators: Sebastian Posur
- *Cohomologies of coherent sheaves and massless spectra in F-theory* (arXiv-ID: 1802.08860)
- *Algebraic Cycles and Local Anomalies in F-theory* (arXiv-ID: 1706.08528)
Collaborators: Christoph Mayrhofer and Timo Weigand
- *Gauge Backgrounds and Zero-Mode Counting in F-theory* (arXiv-ID: 1706.04616)
Collaborators: Christoph Mayrhofer and Timo Weigand
- *Chow groups, Deligne cohomology and massless matter in F-theory* (arXiv-ID: 1402.5144)
Collaborators: Christoph Mayrhofer, Christian Pehle and Timo Weigand

CONFERENCES

- | | |
|------------|--|
| Sept. 2019 | strings and geometry (Oxford, United Kingdom) |
| Aug. 2019 | gap singular meeting and school (Lambrecht, Germany) |
| July 2019 | Strings (Brussels, Belgium) |
| Aug. 2018 | CAP_days 2018 (Siegen, Germany) |
| May 2018 | Kontaktseminar – Schwerpunkt Banken und Beratung (Bonn, Germany) |
| May 2018 | Physiker im Beruf (Bad Honnef, Germany) |
| Mar. 2018 | string_data 2018 (Munich, Germany) |
| Jul. 2017 | String Pheno 2017 (Virginia, USA) |
| Dec. 2015 | String Math (Sanya, China) |
| Sept. 2015 | Third GAP Days (Trondheim, Norway) |
| Mar. 2015 | Second GAP Days (Aachen, Germany) |
| Feb. 2015 | Physics and Geometry of F-theory (Munich, Germany) |
| Dec. 2014 | Homological Perturbation Theory (Galway, Ireland) |
| Aug. 2014 | GAP Days (Aachen, Germany) |
| Feb. 2014 | Geometry and Physics of String Compactifications (Heidelberg, Germany) |

TEACHING EXPERIENCE

Apr. 2018 – Oct. 2018	Senior tutor	methods of mathematical physics 1
Oct. 2016 – Mar. 2017	Tutor	theoretical physics I
Apr. 2016 – Sept. 2016	Senior tutor	General relativity
Apr. 2015 – Sept. 2015	Tutor	theoretical physics IV
Oct. 2014 – Mar. 2015	Tutor	Quantum field theory
Oct. 2013 – Mar. 2014	Tutor	theoretical physics III
Apr. 2013 – Sept. 2013	Tutor	theoretical physics II
Oct. 2012 – Mar. 2013	Tutor	theoretical physics I

ENGAGEMENT AT *Studienstiftung des deutschen Volkes*

June 2018	Member of the admission board <i>Heidelberg</i>
Dec. 2017	Member of the admission board <i>Ellwangen III</i>
May 2017	Training for admission board members – successfully completed
Nov. 2016	Member of the admission board <i>Heidelberg</i>