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Sven Pistre

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Employment

Doctoral researcher — **RWTH Aachen University** — **May 2016 – May 2022**

- Software Development: Led a team of three; reduced the time for exam creation and correction by 85% by designing and developing a solution for automated exam generation via SymPy; employed self-testing code.
- Teaching: Supervised and coordinated eight student assistants; organised and held lectures, in-class tutorials and exams for up to 600 students in Linear Algebra and Calculus.
- Mentoring: Guided first year undergraduate mathematics students and led junior PhD students.
- Mathematical research: Proved existence and regularity for anisotropic minimal surfaces.

Teaching assistant — **Australian National University** — **July 2014 – Nov 2014**

- Teaching: Taught differential equations to physics, engineering and chemistry students; marked assignments.

Teaching and research assistant — **RWTH Aachen University** — **Oct 2011 – Mar 2016**

- Software Development: Improved performance for simulations of nonlinear hyperbolic PDE systems (e.g. shallow water equation) by implementing research results on multiwavelets into institute's C++ framework.
- Teaching: Taught undergraduate mathematics students how to use the software "Maple" for mathematical research; taught a course to bridge the gap between high school and university level mathematics.

Education

Aachen, Germany — **RWTH Aachen University** — **May 2016 – May 2022**

- Dr.rer.nat. (PhD) in Mathematics, GPA: defence expected in May 2023
- Research on anisotropic minimal surfaces. "Can soap films have facets or are they always smooth?"

Canberra, Australia — **Australian National University** — **Jul 2014 – Nov 2015**

- Research stay focusing on differential geometry

Aachen, Germany — **RWTH Aachen University** — **Oct 2010 – Mar 2016**

- M.Sc. in Mathematics (Mar 2016), Thesis grade: 1.0 (very good), GPA: 1.0 (with distinction)
- B.Sc. in Mathematics (Sep 2013), Thesis grade: 1.0 (very good), GPA: 2.0 (good)
- Major: Geometric analysis; optimisation in infinite dimensions. Minor: Quantum physics

Technical Experience

- **cleveref-usedon** (2023). Adds forward-referencing functionality to the `cleveref` LaTeX package. expl3
- **ExamGen** (2020 – 2022). Exam generator which creates randomised exercises and full solutions with parametrised contents for Linear Algebra and Calculus exams upon each run. Outputs both LaTeX files for printed exams as well as Python code for use in RWTH's digital exam system. Python, SymPy
- **Multiwave** (2014). Library primarily designed for simulations of nonlinear first-order hyperbolic PDE systems. C++

Academic Honours and Certificates

- **Dean's List Mathematics (2014 – 2016):** Awarded to top five percent of students in each year.
- **Scholarship "Deutschlandstipendium" (2012 – 2016):** Awarded to top ten percent of students.
- **Certificates:**
  - Excellence in Academic Teaching : "basics" and "extensions"
  - Machine Learning and Deep Learning Specialisations by Andrew Ng, DeepLearning.AI
  - TensorFlow Developer Professional Certificate by Laurence Moroney and Andrew Ng, DeepLearning.AI

Languages and Technologies

- Python [NumPy, SymPy, TensorFlow] (proficient); C++ (prior experience); JavaScript (prior exp.)
- PyCharm; XCode; TeXShop; git
- LaTeX (expert); Maple (expert); Mathematica (prior exp.); SageMath (prior exp.)

Publications

- with Heiko von der Mosel, *The Plateau problem for the Busemann–Hausdorff area in arbitrary codimension*. European J. Math., 2017. DOI: 10.1007/s40879-017-0163-3