

Curriculum Vitae - Patrick Rall

Full name: **Patrick Julian Tassilo Rall**
October 14, 1994 in Munich
Nationality: German



Contact Information

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Graduate Studies

since August 2016: **University of Texas at Austin** - Physics PhD Program
Research scientist at the **Quantum Information Center** under Dr. Scott Aaronson

Undergraduate Studies

2012 - June 2016: **California Institute of Technology** (Caltech) - Class of 2016
Major in Physics, Minor in Computer Science

Research

Apr 15 2018: Patrick Rall. **Simulating Quantum Circuits by Shuffling Paulis.** quant-ph/1708.09256. Conference talks at APS March Meeting 2018, and the Discrete Phase Space Methods workshop, Bad Honnef, August 2018.

Aug 30 2017: Patrick Rall. **Fractal Properties of Magic State Distillation.** quant-ph/1708.09256. Conference talk at the 3rd International Conference for Young Quantum Information Scientists (YQIS) 2017.

Feb 24 2017: Patrick Rall. **Signed quantum weight enumerators characterize qubit magic state distillation.** quant-ph/1702.06990

2016-17: **Quantum Circuit Simulator** An implementation of Sergei Bravyi and David Gosset's algorithm (quant-ph/1601.07601) written together with Iskren Vankov. Available on Github here: <https://github.com/patrickrall/circuitsimulator>

Teaching

2018: TA for the **Quantum Computing Freshman Research Initiative (FRI)**
Prof. Brian La Cour (UT Austin)
Three semester (Spring, Summer, Fall) introductory course.

Since Spring 2017: Graduate adviser for **Quantum Computing Initiative (QCI)**, an undergraduate interest group led by Bryce Fuller. <https://qci-austin.com/>

Spring 2017: TA for **Introduction to Quantum Information Science**
Prof. Scott Aaronson (UT Austin)
Undergraduate course in quantum information.
<http://www.scottaaronson.com/cs378/>

Fall 2016: TA for **General Physics II** - Prof. Zhen Yao (UT Austin)
Undergraduate physics course intended for pre-meds.

Skills

Programming languages: C++, Python, Haskell, HTML, CSS, JS, PHP, L^AT_EX
Software: Mathematica, Git, Django, Apache, Photoshop, ROOT
Computing: Arch Linux, Ubuntu Linux, CentOS, Mac OS X, Windows
Languages: English and German

Pre-Graduate Research Experience

2015: California Institute of Technology, Pasadena: Institute for Quantum Information and Matter (IQIM) - “The Quantum Game of Life” (3 months)
Mentor: Dr. John Preskill (Richard P. Feynman Professor of Theoretical Physics)
Co-mentors: Nicole Yunger Halpern, Dr. Ning Bao
Seminar for Prof. Immanuel Bloch’s research group at LMU, Munich on Dec. 15, 2015
<http://patrickrall.ddns.net/pregrad/PatrickRallQuantumCellularAutomata.pdf>

2014: California Institute of Technology, Pasadena: IQIM
High-sensitivity pump-probe spectroscopy to investigate ultrafast phase transitions in Ca₂RuO₄ (3 months, SURF report and seminar)
Mentor: Dr. David Hsieh, Co-mentor: Hao Chu

2013: German Aerospace Center (DLR), Oberpfaffenhofen: Robotics and Mechatronics Center (RMC) - Fiber-optic sensor real-time signal processing (2 months)
Helmholtz Association, Mentor: Patrick Leyendecker
<http://patrickrall.ddns.net/pregrad/PatrickRallFiberBraggGratings.pdf>

2011: Orbit Determination of 1951 Lick
with Fengning Ding and Jason Liu at SSP 2011
<http://patrickrall.ddns.net/pregrad/PatrickRallOrbitDetermination.pdf>

2012: Max-Planck-Institute for Physics, Munich: Assistance with measurements of silicon detectors and software development for ATLAS data analysis (2 months)

2010: Max-Planck-Institute for Physics, Munich: Analysis of top-quark properties in simulated scattering events with the ATLAS experiment at the LHC (4 months)
Werner Heisenberg Institute
Mentor: Dr. habil. Richard Nisius (ATLAS Inner-Detector Group Leader)
<http://patrickrall.ddns.net/pregrad/PatrickRallTopQuarkJets.pdf>

High School Education

Munich International School - International Baccalaureate - Class of 2012

Last update: August 2018