

Zöbelein Carolin

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Independent mathematical scientist & Artist

Human rights, the right to knowledge, education and the freedom of speech are important values of the human society. They support new kinds of thinking which help to bring the mankind more forward in their place on our planet.

But this rights are not so naturally in certain countries, like it should be. **Countries censor sources of information**, like the internet which has become the most important source for knowledge and freedom of speech.

I'm an independent mathematical scientist (Research Scientist). I work on topics around IT-security, decentralized networks, online privacy & anonymity and censorship circumvention.

I had the luck to be born in a country in which this rights are respected, with free education and open knowledge for everybody, with freedom of speech and without censorship.

Thankful for the possibilities I had, to be able to go to school, attending university and get an high education, **I see a responsibility for using my skills and knowledge, to help people** who don't have this luck.

So, I started to **work** on an independant base, **on anti-censorship and online privacy & anonymity** topics, to help people to get their right to knowledge and freedom of speech.

Online Presence

General.....

- 🌐 General website
<https://www.carolin-zoebelein.de/>
- 🐦 @SamdneyTweet: Random Tweets and Work Update Infos
<https://twitter.com/SamdneyTweet>
- ▶ Pert Pony: Some Android apps
<https://play.google.com/store/apps/dev?id=8935723641051485351>
- 📧 @CarolinZoebelein: Blog
<https://medium.com/@carolinzoebelein>
- 📝 Blog, Mostly math
<https://samdney.github.io/>
- 🌐 Carolin Zöbelein
<https://www.linkedin.com/in/carolin-zoebelein>

Research.....

- ✎ Research Website
<https://research.carolin-zoebelein.de/>
- 📄 Carolin Zöbelein: ePrints and Preprints of my Papers
<https://arxiv.org/search/?searchtype=author&query=Z%C3%B6belein%2C+C>
- 🔗 Samdney: Code, Research Notes, Worksheets, Proposals and Papers
<https://github.com/Samdney>

Art.....

- 🖼 Art Website
<https://art.carolin-zoebelein.de/>
- 🔗 Samdney: Code, Art Projects, Notes
<https://gitlab.com/Samdney>
- 📷 Samdney: Photo and Digital Art work
<https://www.flickr.com/photos/samdney>
- 📺 Carolin Zöbelein - Art: Art Channel, Digital Art, Short films
<https://www.youtube.com/channel/UCqboFicvhrlnPi8eeTv1D1Q>
- 📺 Carolin Zöbelein - Art: Art Channel, Digital Art, Short films
<https://vimeo.com/carolinzoebeleinart>

Projects

Research.....

○ **Decentralized privacy preserving search by mathematical design**

- *Development of a new search engine concept*
Theoretical research and implementation
Id: project_0055

Since 2019/09

Art.....

○ **#Hashtag**

- *Digital art short film series*
Making short films related to hashtags
Id: project_0056art

Since 2019/08

Practical experience

Current.....

Primary work

○ **Independent mathematical scientist**

- *Freelancer, Primary: Researcher, Secondary: Adviser and contractor*
Focus: Decentralized networks, Censorship Circumvention, Online privacy & anonymity, It-Security
Core areas: Mathematical Modelling, Problem Solving and Algorithms, Algebra, Number Theory, Cryptography
<https://research.carolin-zoebelein.de>

Remote, Germany

Since 2016/11

○ **Artist**

- *Freelancer*
Primary: The connection and integration of scientific phenomena into artwork,
Secondary: Every kind of artwork about math, cryptography, privacy and digital security
<https://art.carolin-zoebelein.de>

Remote, Germany

Since 2015/05

For cross-subsidization

○ **Pert Pony - Apps for you**

- *Freelancer, Development and selling of Android apps*
Coding language: Java
<https://www.pertpony.com>

Remote, Germany

Since 2018/06

○ **Consulting**

- *Freelancer*
<https://consulting.carolin-zoebelein.de>

Remote, Germany

Since 2017/07

Volunteering

○ **Tor Project**

- *Volunteer*
<https://www.torproject.org/>

Remote, USA

Since 2016/05

Former.....

○ **Infineon Technologies AG München**

- *Student project work, Information Security - Cyber Defence Center*
Topic: *Evading detection and treatment*, Machine learning based malware detection

Germany

2018/11 - 2019/05

○ **Friedrich-Alexander-University Erlangen-Nürnberg, Department for Mathematics**

- *Student assistant, IT-Support*

Germany

2016/04 - 2016/09

○ **Siemens AG Forchheim**

- *Student assistant, Computer Tomography development*
Revision of data analysis programs for research. Coding language: Matlab

Germany

2015/03 - 2015/09

- Friedrich-Alexander-University Erlangen-Nürnberg** **Germany**
 ◦ *Student assistant* 2012/10 - 2016/09
 Tutor for exercise lessons and practical courses in physics
- High-Octane Motorsports e.V., University Erlangen-Nürnberg** **Germany**
 ◦ *Student member, Society in terms of the competition Formula Student* 2012/10 - 2013/07
 Tire simulation data analysis. Coding language: Matlab
- University medical centre Erlangen, ENT-hospital, Phoniatriy and pedaudiology** **Germany**
 ◦ *Student assistant, Group: Fluid physical principles of the human vocalisation* 2011/01 - 2012/03
 Building and revision of numerical simulation and data analysis programs for research.
 Coding languages: C/C++, C#, Python
- Independent** **Germany**
 ◦ *Volunteering* 2004/03 - 2016/03
 Unpaid private lessons for socially disadvantaged pupils

Education

Studies

- FernUniversität Hagen (Remote University)** **Germany**
 ◦ *Unstructured studies. Mathematics & Computer Science* Since 2019/04
 Doing my missing exams for getting a Bachelor of Science in Math (Minor: Computer Science) and a Master of Science in Practical Computer Science
- Friedrich-Alexander-University Erlangen-Nürnberg** **Germany**
 ◦ *Bachelor of Science Computer Science, Paused* 2017/10 - 2019/03
 Major interests: Cryptography, IT-Security
- Friedrich-Alexander-University Erlangen-Nürnberg** **Germany**
 ◦ *Master of Science Physics, Aborted* 2013/04 - 2016/09
- Friedrich-Alexander-University Erlangen-Nürnberg** **Germany**
 ◦ *Bachelor of Science Physics, 2013/09* 2008/10 - 2013/09
 Bachelor thesis: *Dirac-Observablen in der Kosmologie* (Dirac observables in cosmology)
 Chair for Theoretical Physics III: Institute for Quantum Gravity, Supervisor: Prof. Dr. Kristina Giesel
 Major interests: Quantum gravity, Mathematical physics, Influence of number theory on physics

School education

- Peter-Vischer-School Nürnberg** **Germany**
 ◦ *Department Gymnasium, Mathematic, natural scientific focus* 2004/09 - 2008/06
 Abitur 2008/06 (University entrance qualification)
- Peter-Vischer-School Nürnberg** **Germany**
 ◦ *Department Realschule, Mathematic, natural scientific, technical focus* 2000/09 - 2004/07
 School leaving certificate 2004/07
- Ludwig-Uhland-School Nürnberg** **Germany**
 ◦ *Department Hauptschule* 1998/09 - 2000/07

Training courses

- Friedrich-Alexander-University Erlangen-Nürnberg** **Germany**
 ◦ *Training center for academic teaching (FBZHL)* 2017/11
 Didactics for tutors of the Faculty of Engineering - Basic course II
- Friedrich-Alexander-University Erlangen-Nürnberg** **Germany**
 ◦ *Training center for academic teaching (FBZHL)* 2017/10
 Cross-cultural sensitization for tutors

Grants & Fellowships

- **NGI Zero Discovery** **Netherlands**
2019
NLnet Foundation
Grant, 12 months, 19 100 EUR, Related: project_0055
<https://nlnet.nl/discovery/>
- **YOLANTE** **Germany**
2013
Siemens AG
Mentorship program for female students, Mentee

Awards

- **Mädchen für Technik Preis (Girls for Technology award)** **Germany**
2005/07
Siemens AG
Pupil award for extraordinary achievements in mathematical, natural scientific and technical subjects

Publications

Preprints

- [1] ZÖBELEIN, Carolin: *The recursive structure of the distribution of primes*. <https://arxiv.org/abs/1411.2824>. Version: 2014
- [2] ZÖBELEIN, Carolin: *About the proof of the Collatz conjecture*. <https://arxiv.org/abs/1303.2073>. Version: 2013

Thesis

- [1] ZÖBELEIN, Carolin: *Dirac Observablen in der Kosmologie*. 2013

Apps

- **Cool Down** v01: 2018/09/09
Health & Fitness
Includes advertising, Coding language: Java
App for your mental health which wants to help you to conquer bad emotional times.
<https://play.google.com/store/apps/details?id=com.pertpony.cooldown>
- **Catchy Balls** v01: 2018/06/04
Casual Game
Includes In-App purchases, Coding language: Java
Catch all the balls which have the shown color and get points.
<https://play.google.com/store/apps/details?id=com.pertpony.catchyballs>

Exhibitions

- **'Concept' - International Exhibition on Conceptual Art** **Korea**
2016/05/06 - 2016/05/29
Group exhibition
CICA Museum, 196-30, Samdo-ro, Yangchon-eup, Gimpo-si, Gyeonggi-do, Korea 415-843
Artworks: Photo with title '*I was here*', Photo with title '*Signing*'
<https://cicamuseum.com/concept-2016-5-6-29>
https://cicamuseum.com/wp-content/uploads/2016/05/Concept_catalog.pdf
- **#TwitterArtExhibit: NYC - 2016** **USA**
2016/03/31 - 2016/04/21
Group exhibition
Trygve Lie Gallery, 317 E 52nd St., New York, NY 10022
Artwork: Postcard (Acrylic paint) with title '*All is public - No secrets*'
<http://twitterartexhibit.org>

Organized Meetups & Workshops

Why you should study Number Theory!

- *A friendly together for talking about Number Theory studies with coffee and tea.*
Friedrich-Alexander-University Erlangen-Nürnberg, Department for Mathematics

Germany
2018/10

Teaching

Non academic.....

- Remote teaching about online anonymity, privacy and encryption tools
- Private lessons for pupils of fifth year and above, from all kinds of Bavarian school types.
Subjects: Math, Physics, Chemistry, Technology, Computer Science, French, Spanish

Bachelor courses (Tutor).....

- Mathematics for engineers 1 & 2
- Experimental physics for natural scientists 1 & 2
- Experimental physics for engineers 1 & 2
- Experimental physics 5: Nuclear and particle physics
- Theoretical physics 4: Statistical physics
- Practical basis courses 1 in physics for physicists part 1 & 2
- Practical courses in physics for engineers

Master courses (Tutor).....

- Advanced experimental physics: Particle and astroparticle physics
- Advanced theoretical physics: Advanced quantum mechanics

Skills

Math.....

App. Number Theory: Algebra, Cryptography, Number Theory

Mathematical Modelling: Analysis, Complex Analysis, Functional Analysis, Geometry, Graph Theory, Mathematical Physics, Numerical Analysis, Optimization and Control

Hacking.....

Areas of work: Cryptography, Social engineering, QR codes, Online privacy & anonymity, Reverse engineering, Computer forensics

Technical.....

Coding: C, C++, C#, Java, LabView, NASM, Perl, PHP, Python, Rust

Mobile Dev.: Android apps (Java)

Debugging: gdb, pdb, Valgrind

Database: MySQL, PostgreSQL, SQLite

Math: GNU PSP, GNU Octave, Maple, Matlab, R, SageMath, Scilab

Virtualization: Docker, KVM, QEMU, VirtualBox

Cloud Comp.: AWS, Docker Cloud, Microsoft Azure

Networking: Ettercap, netcat, netstat, nmap, scapy, tcpdump, traceroute, Wireshark, ...

WebServer: Apache HTTP Server, nginx

Monitoring: Munin, Nagios, Zabbix

SCM: Puppet

VC: Git, SVN

CAD - Basics: Solid Edge, Pro/ENGINEER Wildfire

Languages.....

First: German

Good: English

Basics: Modern Standard Arabic, Standard Chinese, French, Spanish, Swahili

A few words: German Sign Language, Hausa, Modern Hebrew, Italian, Japanese, Kinyarwanda, Russian, Standard Tibetan

Free time activities

- Every kind of language (spoken, coding, math, ...)
- Hanging around on irc

October 10, 2019