Zöbelein Carolin

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Independent mathematical scientist
&
Artist

In a nutshell

Hi,

my name is Carolin and I'm an independent mathematical scientist. I work as freelancer on topics around it-security, decentralized networks, online privacy & anonymity and censorship circumvention with mathematical (Cryptography, Algebra, Number Theory) focus.

I publish all my work under free licenses (as long it is not limited by third parties). I believe in open knowledge and that the results of research and its access has to be possible and free, without any fees, for everybody.

I would be happy to get your support, to protect our right for private communication, open knowledge and online security.

○ Academic degree: Bachelor of Science Physics

Websites:
○ Main: https://www.carolin-zoebelein.de
○ Research: https://research.carolin-zoebelein.de
○ Art: https://art.carolin-zoebelein.de

Practical experience

Current

Primary work

○ **Independent mathematical scientist**   **Remote, Germany**
Freelancer, Primary: Researcher, Secondary: Adviser and contractor   *Since 2016/11*
Focus: Decentralized networks, Online privacy & anonymity, It-Security
Core areas: Mathematical Modelling, Algebra, Number Theory, Cryptography
https://research.carolin-zoebelein.de

○ **Artist**   **Remote, Germany**
Freelancer   *Since 2015/05*
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

For cross-subsidization

○ **Pert Pony - Apps for you** **Remote, Germany**
Freelancer, Development and selling of Android apps *Since 2018/06*
Coding language: Java
`https://www.pertpony.com`

○ **Consulting** **Germany**
Freelancer *Since 2017/07*
`https://consulting.carolin-zoebelein.de`

Volunteering

○ **Tor Project** **Remote, USA**
Volunteer *Since 2016/05*

Former

○ **Infineon Technologies AG München** **Germany**
Student project work, Information Security - Cyber Defence Center *2018/11 - 2019/04*
Topic: *Evading detection and treatment*, Machine learning based malware detection

○ **Friedrich-Alexander-University Erlangen-Nürnberg, Department for Mathematics** **Germany**
Student assistant, IT-Support *2016/04 - 2016/09*

○ **Siemens AG Forchheim** **Germany**
Student assistant, Computer Tomography development *2015/03 - 2015/09*
Revision of data analysis programs for research. Coding language: Matlab

○ **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, Phoniatry 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

○ **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

YOLANTE **Germany**
Siemens AG *2013*
Mentorship program for female students, Mentee

Awards

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

Commercial

○ **Cool Down**
Health & Fitness *v01: 2018/09/09*
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**
Casual Game *v01: 2018/06/04*
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**
Group exhibition *2016/05/06 - 2016/05/29*
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**
Group exhibition *2016/03/31 - 2016/04/21*
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!** **Germany**
A friendly together for talking about Number Theory studies with coffee and tea. *2018/10*
Friedrich-Alexander-University Erlangen-Nürnberg, Department for Mathematics

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

○ 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

○ 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 PSPP, 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

Further information

You can find parts of my work also on...
- (Math) Blog: `https://Samdney.github.io`
- GitHub: `https://github.com/Samdney`
- arXiv: `https://arxiv.org/search/?searchtype=author&query=Z%C3%B6belein%2C+C`

Preferred work: (Remote), Looking for contractor jobs
Contact: Please use e-mail
Hiring Manual: `http://www.carolin-zoebelein.de/aboutme/portfolio/files/hiring-manual.pdf`

Free time activities

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

July 2, 2019