Particulars

Last Name	Zürcher
First Name	Dominik
Date of Birth	24.09.1993
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Education

2016 – 2018	M.Sc. in Interdisciplinary Sciences, ETH Zurich, Switzerland *Major: Physics, Minor: Physical Chemistry*
2013 – 2016	B.Sc. in Interdisciplinary Sciences, ETH Zurich, Switzerland *Major: Physics, Minor: Physical Chemistry*

Work

2018 – present	PhD in Physics, ETH Zurich, Switzerland *Area: Computational Astrophysics* *Supervisor: Alexandre Refregier*
2019 – 2022	Cryptologist for Swiss Army, Switzerland (seasonal)

Languages

German (Mother-tongue)
English (C2 Level)
French (B1 Level)
Japanese (Basic knowledge)

Programming/IT skills

I am a computer enthusiast interested in particular in the Linux operating system and data science.
Due to my interest in Linux I accquired some knowledge about the inner workings of operating systems in general as well as some basic system administrator skills. I use different programming languages in my daily work, but I work primarily with Python.
In particular, I am familiar with libraries used for data visualization (matplotlib, seaborn), data analysis and scientific computing (numpy, pandas, scipy), machine learning (scikit-learn, tensorflow, keras, xgboost) and high performance computing (mpi4py, numba, emcee, h5py, Cython).

In my research I use state-of-the-art supercomputers to run massively parallelized simulations and big data analyses.
Thanks to my work I accquired an efficient workflow and learned the basics of software engineering, code testing and CI/CD (git, gitlab CI).
During my work for the Swiss army I learned the basics of cryptology and OpenCL.

Programming languages:

General	Python (advanced), C/C++ (intermediate), R (basics)
DDL/DML	PostgreSQL (basics)
Web development	HTML, CSS (basics)
Others	Scripting/Bash (intermediate), LaTeX (intermediate)

Other work-related skills

Quantitative data anlysis, scientific computing, statistics, Approximate Bayesian Computation (ABC), data visualization, cryptology, machine learning, software development, CI/CD, project management, teamwork, SCRUM

Publications/Research projects

Publications:

Zürcher, Dominik, et al. "Towards a full wCDM map-based analysis for weak lensing surveys" arXiv preprint arXiv:2206.01450 (2022).

Zürcher, Dominik, et al. "Dark Energy Survey Year 3 results: Cosmology with peaks using an emulator approach" Monthly Notices of the Royal Astronomical Society 511.2 (2022): 2075-2104.

Doux, Cyrille, et al. "Dark Energy Survey Year 3 results: cosmological constraints from the analysis of cosmic shear in harmonic space" arXiv preprint arXiv:2203.07128 (2022).

Secco, Lucas, et al. "Dark Energy Survey Year 3 Results: Three-Point Shear Correlations and Mass Aperture Moments" arXiv preprint arXiv:2201.05227 (2022).

Kovacs, Alexander, et al. "The DES view of the Eridanus supervoid and the CMB Cold Spot" Monthly Notices of the Royal Astronomical Society 510.1 (2022): 216-229.

Jeffrey, Niall, et al. "Dark Energy Survey Year 3 results: curved-sky weak lensing mass map reconstruction" Monthly Notices of the Royal Astronomical Society 505.3 (2021): 4626-4645.

Gatti, Marco, et al. "Dark Energy Survey Year 3 results: cosmology with moments of weak lensing mass maps" arXiv preprint arXiv:2110.10141 (2021)

Sgier, Raphael, et al. "Combined 13x2-point analysis of the Cosmic Microwave Background and Large-Scale Structure: implications for the S8-tension and neutrino mass constraints"

arXiv preprint arXiv:2110.03815 (2021)

Zürcher, Dominik, et al. "Cosmological forecast for non-Gaussian statistics in large-scale weak lensing surveys" Journal of Cosmology and Astroparticle Physics 2021.01 (2021): 028.

Fagioli, Martina, et al. "Spectro-imaging forward model of red and blue galaxies" Journal of Cosmology and Astroparticle Physics 2020.06 (2020): 050.

Zürcher, Dominik, and Surhud, More. "The splashback radius of Planck SZ clusters" The Astrophysical Journal 874.2 (2019): 184.

Other research projects:

2018	Master thesis in research group of Masahiro Takada at University of Tokyo, Tokyo, Japan
2016	Bachelor thesis in research group of Andre Rubbia at CERN, Geneva, Switzerland

Teaching

2022	Physics I for material scientists at ETH Zurich, Switzerland
2021	Physics II for chemists and chemical engineers at ETH Zurich, Switzerland
2020	Physics II for electrical engineers at ETH Zurich, Switzerland
2020	Astrophysics II at ETH Zurich, Switzerland
2019	Physics I for physicists at ETH Zurich, Switzerland
2019	Astrophysics II at ETH Zurich, Switzerland

Supervision

2022	Master thesis of a student in the Cosmology Research Group ETH Zurich, Switzerland
2021	Master thesis of a student in the Cosmology Research Group ETH Zurich, Switzerland
2020	Master thesis of a student in the Cosmology Research Group ETH Zurich, Switzerland
2019	Bachelor thesis of a student in the Cosmology Research Group ETH Zurich, Switzerland
2018	Semester project of a student in the Cosmology Research Group ETH Zurich, Switzerland

Hobbies

Mountaineering, weight-lifting, running, skiing

Others

1st place at Datathon 2022 D-One Challenge

External resources

Personal webpage
GitHub

ETH Gitlab projects
eSD
esub-epipe
estats
NGSF
ekit