

Benjamin F. Maier

Curriculum vitae

EDUCATION

2014–TODAY	Humboldt University of Berlin PHD IN THEORETICAL PHYSICS <i>ongoing</i>
2014	Humboldt University of Berlin M.Sc. PHYSICS <i>final grade: 1.2, thesis: 1.0¹</i>
2011–12	Utrecht University, NL ERASMUS <i>10 months visit</i>
2011	Humboldt University of Berlin B.Sc. PHYSICS <i>final grade: 1.7, thesis: 1.0</i>
2008	Sartre-Gymnasium, Berlin-Hellersdorf ABITUR (GERMAN HIGH SCHOOL DIPLOMA) <i>final grade: 1.2, intensive courses: Physics, Computer Science</i>

WORKING EXPERIENCE

Self-employed	SINCE 2015
Data Scientist	
Department of Physics (HU Berlin)	2013 – 2014
Teaching Assistant	
course: Classical Mechanics and Introduction to Thermodynamics	
IfG – Institute for Scientific Instruments	2010 – 2011
Student Assistant	
GUI development for a color-resolved X-ray camera with interactive periodic table (C++ and Qt)	
Department of Physics (HU Berlin), AG PHÄ	2010
Research Internships	
two internships for the implementation of Ewald's method	
Department of Medicine (HU Berlin): Charité	2009 – 2010
Teaching Assistant	
TA for the Physics lab class of medicine freshmen	

ADDITIONAL TEACHING EXPERIENCE

Deutsche Schülerakademie	2016
Teacher	
three week summer school course on "Network Science and Complex Systems" for gifted high-school students	
Student Association for Physics (HU Berlin)	2013
Prep Course Computational Physics	
one lecture and a tutorial class to prepare sophomores for the bachelor's course "Computational Physics"	

¹grading in Germany: 1.0-1.6 = very good; 1.7-2.6 = good; 2.7-3.6 = satisfactory; 3.7-4.0 = sufficient; 5.0 = failure

2009

Student Association for Physics (HU Berlin)

Recap Course Mathematics

one lecture and a tutorial class to give a recapitulation of school mathematics in advance to official lectures

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SCIENTIFIC WORK

PUBLICATIONS	(co-)author of four publications, see attached
TALKS	presenter on multiple conferences, see attached
THESES	M.Sc.: Thermophoresis in Liquids and its Connection to Equilibrium Quantities B.Sc.: Simulations of Dyon Configurations in SU(2) Yang-Mills Theory

AWARDS & SCHOLARSHIPS

2014	Recipient of the HU Berlin Research Track Scholarship
2011-2014	Fellow of the German National Academic Foundation (SDV) including scholarship
2008	DPG award – outstanding Abitur exam
2007	DPG award – intensive course physics

VOLUNTARY WORK & FREE TIME

I have participated in voluntary activities in the department's student association since 2008. Responsibilities besides others: re-designing the department's study regulations together with professors, partial organisation of a student association conference (ZaPF 2010), partial organisation of numerous freshmen introduction weekend trips, handling the association's finances, mentoring for freshmen, design and implementation of various web pages. From 2015 to 2016 I have given personal lessons in math and programming to a teenager of a less fortunate social background in the Fibonacci program.

In my free time I produce electronic music using synthesizers and live coding techniques, build furniture or play the guitar.

LANGUAGES

GERMAN	native
ENGLISH	fluent (TOEFL IBT, score 106)
FRENCH	basic (A2)

IT KNOWLEDGE

OS	Linux, Mac OS, Windows
SCIENCE	Numpy, Scipy, Matlab, Mathematica
DEVELOPMENT	Python, C++, JS, C, Qt, bash, MySQL, PostgreSQL, HIVE
OFFICE	LibreOffice, MS Excel, \LaTeX
WEB	JS (D3.js and Phaser.js), HTML, CSS, PHP
APIs	Google, Twitter, Spotify
GRAPHICS	InkScape, Gimp, Graphic (iDraw), Omnigraffle

PUBLICATIONS

- F. Klimm, B. F. Maier, *A network science summer course for high school students* (2017), submitted, in preparation
- B. F. Maier, D. Brockmann, *Cover time for random walks on arbitrary complex networks*, Phys. Rev. E 96 (4), 042307 (2017)
- B. Maier, F. Bruckmann, S. Dinter, E. M. Ilgenfritz, M. Müller-Preußker, M. Wagner, *Application of Ewald's Method for Efficient Summation of Dyon Long-Range Potentials*, PoS Confinement10:051 (2012)
- F. Bruckmann, S. Dinter, E.M. Ilgenfritz, B. Maier, M. Müller-Preußker, M. Wagner, *Confining dyon gas with finite-volume effects under control*, Phys. Rev. D 85, 034502 (2012)

PRESENTATIONS

- *When you're sick, please stay at home – Making sense of spreading phenomena using human mobility and contact data*, idalab company seminar, invited speaker, Berlin (2018)
- *Flockworks: A class of dynamic network models for face-to-face interactions*, DPG Frühjahrstagung, Berlin (2018)
- *Flockworks: A class of dynamic network models for face-to-face interactions*, Group seminar of Prof. Lehmann, DTU Copenhagen (2017)
- *Influence of group-structured network topologies on dynamical processes*, Princeton-Humboldt cooperation workshop CoCCoN, Princeton (2017)
- *Influence of group-structured network topologies on dynamical processes*, Group seminar "Biophysics and Evolutionary Dynamics", Berkeley (2016)
- *Flockworks: A class of dynamic network models for face-to-face interactions*, NetSci, Seoul (2016)
- *Flockworks: A class of dynamic network models for face-to-face interactions*, Network Journal Club, Oxford (2016)
- *Modular hierarchical random networks – Topology and Dynamics*, NetSci, Zaragoza (2015)
- *Application of Ewald's Method for Efficient Summation of Dyon Long-Range Potentials*, Confinement X, Munich (2012)
- *Confining dyon gas with finite-volume effects under control*, DPG-Frühjahrstagung Göttingen (2012)
- *Simulations of dyon configurations in SU(2) Yang-Mills theory*, DPG-Frühjahrstagung Karlsruhe (2011)

SCHOOLS AND SEMINARS

- *HU Berlin IRI Life Sciences Graduate School*, Member, Berlin (ongoing)
- *Complex Systems Summer School*, Santa Fe Institute for Complex Systems, Santa Fe (2018)
- *Deep Learning Specialization*, coursera.org (2017-2018)
- *Sustainable Time Management*, Humboldt Graduate School, Berlin (2015)
- *Humboldt Graduate School*, Member, Berlin (2015)
- *Complex Networks: Theory, Methods and Applications*, Lake Como School of Advanced Studies in Complex Systems, Como (2015)

OPEN SOURCE PACKAGES

- *cMHRN*, github.com/benmaier/cMHRN, Fast generation of modular hierarchical networks, power-law small-world networks and conventional small-world networks
- *QSuite*, github.com/benmaier/qsuite, A package and commandline-tool for efficient submission and analysis of calculations and simulations on supercomputers
- *binpacking*, github.com/benmaier/binpacking, For optimal distribution of weighted items to bins
- *EffectiveDistance*, github.com/benmaier/effective-distance, Calculation of effective distance in human transport networks as described in Brockmann, et al. (2013)
- *RadialDistanceLayout*, github.com/benmaier/radial-distance-layout, Arrange a shortest-path tree in a radial layout according to their effective distance to the root as described in Brockmann, et al. (2013)
- *NetworkProperties*, github.com/benmaier/network-properties A Collection of useful methods for the analysis of networks in Python
- *nwDiff*, github.com/benmaier/nwDiff, pure-Python library for simulation and calculation of diffusion processes on complex networks
- *cNetworkDiff*, github.com/benmaier/cNetworkDiff, C++-based package for simulation and calculation of diffusion processes on complex networks
- *tacoma*, github.com/benmaier/tacoma, work in progress, to be released in September 2018, C++ and Python-based package for the analysis and simulation of temporal contact networks in continuous time
- *fisheye*, github.com/benmaier/fisheye, Javascript-library for local magnification of data in low-dimensional visualizations, see also: beta.observablehq.com/benmaier/a-visually-more-appealing-fisheye-function
- *hospiTrans*, github.com/benmaier/hospiTrans, work in progress, release: end of 2018, Python-package for the analysis of MRSA-diffusion in hospitals, (with A. Wittig, and T. Denell)
- *BFMaierFBnetwork*, github.com/benmaier/BFMaierFBnetwork, social network data, published in the Colorado Index of Complex Networks (icon.colorado.edu)
- *GTOM*, github.com/benmaier/GTOM, A Python-package for the computation of the general topological overlap measure for potentially very large networks
- *circleplot*, github.com/benmaier/circleplot, A visualization tool to illustrate the evolution of interaction parameters in co-evolving pathogens
- *DynGillEpi*, github.com/benmaier/DynGillEpi, An adaption of the Gillespie stochastic simulation algorithm for temporal networks in discrete time, original Author: C. Vestergaard
- *species-overlap*, github.com/benmaier/species-overlap, Compute incidence and abundance based overlaps of species in different ponds in a fast manner using linear algebra
- *similarity-indices*, github.com/benmaier/similarity-indices, Compute diverse incidence based or abundance based similarity indices
- *quasispecies*, github.com/benmaier/quasispecies, Provides classes to obtain the stable equilibrium of a quasispecies equation run on a complex network
- *AvaSim*, github.com/benmaier/AvaSim, work in progress, to be released: end of 2018, Simulations of neural activity in networks with varying amounts of long-range links