



Karsten Miermans

Curriculum Vitæ

Personal Details

Born in Mierlo, The Netherlands (1990). Dutch and U.S.A. citizenships.

Based in Munich, Germany. Willing to relocate.

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Personal Statement

+ theoretical physicist + critical thinking aficionado + appreciates effective communication + gets kick out of (writing) clean and robust code + enjoys making pretty scientific illustrations + aspires to work in tech.

Starting my higher education in engineering physics at a 'hogeschool' (Fachhochschule), I'm trained with a practical mindset. Then, I continued my training in (theoretical) physics on both the university and PhD-level. This combination has given me a solution-oriented mindset, as well as the ability to abstract and think analytically.

Skills and Tools

microtools beginner. vim, bash, slurm.

TDD beginner-intermediate. Unit testing (Google test) and property testing (rapidcheck).

illustration intermediate. Scientific Illustration in Photoshop, Illustrator, VTK.

mathematics intermediate. Working understanding of math needed for theoretical physics.

simulations intermediate-advanced. Design, testing, analysis of (statistical) physics simulations.

programming intermediate-advanced. Python and C++.

scientific writing intermediate-advanced. Grant proposal (1x), papers (3x), theses (3x), thesis reviews (3x).

Education

2016–now **Doctoral Degree in Theoretical Physics, LMU Munich, Germany.**

Expected finish: December 2019. Main themes: tailored Monte-Carlo simulations to elucidate DNA organization. Group: Theoretical Statistical & Biological Physics (Prof. Dr. Broedersz).

2011–2015 **Master of Applied Physics, Eindhoven University of Technology (TU/e), Eindhoven, NL.**

Broad focus: theoretical physics in biology and soft-matter with "Theoretical Physics for Industry" certificate. Topical focus: neuroscience, biophysical measurements in medicine and biophysics.

2007–2011 **Bachelor of Engineering Physics, Fontys Hogeschoolen, Eindhoven, NL.**

Languages

English fluent

Dutch fluent

German intermediate

Work Experience

- '19-'20 **Founder and co-teacher of course “Understanding Thinking”, Lyzeum 2 e.V..**
Goal: teach high-school students critical thinking skills. lyzeum-muenchen.de/understanding-thinking
- Feb.'16–now **Doctoral Student, Group “Theoretical Statistical and Biological Physics”, LMU Munich.**
Goal: understanding basic physical mechanisms of DNA organization. Method: tailored computer simulations. Supervisor: C.P. Broedersz. Students: Srikanth Subramanian (Master) and Žan Kokalj (Bachelor).
- '16-'19 **Teaching, LMU Munich.**
Taught weekly classes for courses Soft Matter Physics (2x), Stochastic Processes (2x) and Advanced Statistical Physics (1x).
- '17-'19 **Volunteer, Kältebus München e.V..**
Goal: providing hot meals for the homeless in Munich during the cold winter months.
- Nov.'14–Nov.'15 **Research Project, Research Group “Theory of Polymers and Soft Matter”, TU/e.**
Ten-month research project. Goal: Understand physics of synapse growth. Method: Numerically solve PDEs. Student: René de Bruijn (Bachelor). Supervisors: Dr.C. Storm,R. Kusters, Grade: 8.5.
- 2014–2015 **Tutoring, Wismon.**
Tutoring of several high-school students in mathematics and physics.
- 2013–2014 **Teaching, TU/e.**
Tending to a freshman class in physics (*Q&A Sessions*)
- 2009–2014 **Barista.**
Barista, bartender and waiter jobs at a bar and two restaurants
- 2011 **Internship, FEI Company, Veldhoven.**
Six-month research internship. Goal: Improve CMOS image capture quality. Method: MATLAB analysis of electron scattering data. Grade: 8.
- 2010 **Student Rep., Dept. Advisory Committee.**
Member of Departmental Advisory Committee of my college. Goal: Provide feedback from students to school administration.
- 2008–2010 **Board positions, Study Association.**
Board member (function: Student Rep. for the Dept. of Engineering Physics) and chairman of various committees (Education, Sponsoring and CERN Study Trip Committees) in the study association. Goal: Provide fun and educative activities to students that also build friendships.
- 2009 **Internship, Research Group “Elementary Processes in Gas discharges” at the TU/e.**
Six months research internship. Goal: understand lightning on earth and other planets using laboratory scale models. Method: Nanosecond image capture of plasma discharges generated by high-voltage pulse source.

Publications and Talks

- paper Nijdam, S., Miermans, K., van Veldhuizen, E. M., and Ebert, U. (2011). A peculiar streamer morphology created by a complex voltage pulse. *IEEE TRANSACTIONS ON PLASMA SCIENCE* 39.11.
- paper Miermans, C.A., Kusters, R.P.T., Hoogenraad, C.C. and Storm, C. (2017). Biophysical model of the role of actin remodeling on dendritic spine morphology. *PLOS ONE* 12(2): e0170113. <https://doi.org/10.1371/journal.pone.0170113>
- paper Miermans, C.A., and Broedersz, C.P.. (2018). Bacterial chromosome organization by collective dynamics of SMC condensins. *J. R. SOC. INTERFACE* 15: 20180495. <http://dx.doi.org/10.1098/rsif.2018.0495>
- talks invited talk at research group “Theory of Polymers and Soft-Matter”, TU/e (2016); spring-meeting of Deutsche Physikalische Gesellschaft, Dresden (2017); research talk at Biochemical Society workshop, Leiden (2018); invited talk at Omar Saleh group, University of California Santa Barbara (2018); talk at March-meeting of American Physical Society, Boston (2019); informal invited talk at Mirny lab, MIT (2019)