FABIAN SCHUHMANN

PERSONAL INFORMATION

email	fabian.schuhmann@nbi.ku.dk
website	fabian.schuhmaenner.net
orcid	0000-0002-3768-6494

EMPLOYMENT HISTORY

research assistant — **2023-now** · **Niels Bohr Institute, University of Copenhagen** · **post-doc researcher in the group of Prof. Dr. Weria Pezeshkian**
I perform and analyse molecular dynamics simulations of proteins, membranes, and protein complexes.

research assistant — 2023-2023 · Carl von Ossietzky University Oldenburg · post-doc researcher in the group of Prof. Dr. Dr. Ilia A. Solov'yov
I learned coarse-grained molecular dynamics simulations and finalized SiMBols, a trajectory analysis comparing package for Python.

research assistant — 2020-2023 · Carl von Ossietzky University Oldenburg · Ph.D. student in the group of Prof. Dr. Dr. Ilia A. Solov'yov
I conducted all-atom molecular dynamics simulations of proteins in different states and derived ways to comparably analyse simulation trajectories.

teaching assistant — 2017-2019 · Ruhr-University Bochum · tutor for different mathematics service lectures for Prof. Dr. Heinzner, Dr. Jörg Härterich, and AOR PD Dr. Kacso

assistant — 2015-2019 · Hochschule Bochum · assistant with the "Institut für Mathematik und Technikdidaktik" for Prof. Dr. Mike Scherfner

teaching assistant — 2015-2019 · Hochschule Bochum · tutor for mathematics for economists for Prof. Dr. Skill

EDUCATION

Dr. rer. nat (Ph.D.) — 2020-2023 · CARL VON OSSIETZKY UNIVERSITY OLDENBURG · Institute of Physics
Thesis: *Spotting The Difference - Tailored Tools to Analyze Protein Dynamics*;
graduated 'summa cum laude'
Advisor: Prof. Dr. Dr. Ilia A. Solov'yov

Master of Science — 2017-2019 · RUHR UNIVERSITY BOCHUM · Faculty of Mathematics
Thesis: *Dynamics of billiards with emphasis on the length of the shortest periodic billiard trajectory*
Advisor: Prof. Dr. Alberto Abbondandolo

Bachelor of Science — 2013-2016 · RUHR UNIVERSITY BOCHUM · Faculty of Mathematics
Thesis: *Das Brunn-Minkowski Theorem und die isoperimetrische Ungleichung*
Advisor: Prof. Dr. Alberto Abbondandolo

Bachelor of Science — 2011-2016 · RUHR UNIVERSITY BOCHUM · Faculty of Economics
Thesis: *Globaler Umweltschutz als Problem der privaten Bereitstellung eines öffentlichen Gutes*
Advisor: Prof. Dr. Julio. R. Robledo

1. INTRODUCING THE AUTOMATED LIGAND SEARCHER
Luise Jacobsen, Jonathan Hungerland, Vladimir Bačić, Luca Gerhards, Fabian Schuhmann, Ilia A. Solov'yov
Journal of Chemical Information and Modeling 2023, Volume 63, p. 7518-7528

2. ACROSS ATOMS TO CROSSING CONTINENTS: APPLICATION OF SIMILARITY MEASURES TO BIOLOGICAL LOCATION DATA
Fabian Schuhmann, Leonie Ryvkin, James D. McLaren, Luca Gerhards, Ilia A. Solov'yov
Plos ONE 2023, Volume 18, p. e0284736

3. EFFECTS OF DYNAMICAL DEGREES OF FREEDOM ON MAGNETIC COMPASS SENSITIVITY: A COMPARISON OF PLANT AND AVIAN CRYPTOCHROMES
Gesa Grüning, Siu Ying Wong, Luca Gerhards, Fabian Schuhmann, Daniel R. Kattnig, P. J. Hore, Ilia A. Solov'yov
Journal of the American Chemical Society 2022, Volume 144, p. 22902-22914

4. ON THE ENERGETIC DIFFERENCES OF AVIAN CRYPTOCHROMES 4 FROM SELECTED SPECIES
Maja Hanić, Anders Frederiksen, Fabian Schuhmann, Ilia A. Solov'yov
The European Phyiscal Journal D 2022, Volume 76, p. 198

5. THE SAME, BUT DIFFERENT, BUT STILL THE SAME: STRUCTURAL AND DYNAMICAL DIFFERENCES OF NEUTROPHIL ELASTASE AND CATHEPSIN G
Fabian Schuhmann, Xiangyin Tan, Luca Gerhards, Heloisa N. Bordallo, Ilia A. Solov'yov
The European Phyiscal Journal D 2022, Volume 76, p. 126

6. COMPUTATIONAL RECONSTRUCTION AND ANALYSIS OF STRUCTURAL MODELS OF AVIAN CRYPTOCHROME 4
Maja Hanić, Fabian Schuhmann, Anders Frederiksen, Corinna Langebrake, Georg Manthey, Miriam Liedvogel, Jingjing Xu, Henrik Mouritsen, Ilia A. Solov'yov
Journal of Physical Chemistry B 2022, Volume 126, p. 4623-4635

7. THE TRANSITION OF PHOTORECEPTOR GUANYLATE CYCLASE TYPE 1 TO THE ACTIVE STATE
Manisha Kumari Shahu, Fabian Schuhmann, Alexander Scholten, Ilia A. Solov'yov, Karl-Wilhelm Koch
International Journal of Molecular Sciences 2022, Volume 23, p. 4030

8. NAVIGATION OF MIGRATORY SONGBIRDS: A QUANTUM MAGNETIC COMPASS SENSOR
Siu Ying Wong, Anders Frederiksen, Maja Hanić, Fabian Schuhmann, Gesa Grüning, P. J. Hore, Ilia A. Solov'yov
Neuroforum 2021, Volume 27, Issue 3, p. 141-150

9. EXPLORING POST-ACTIVATION CONFORMATIONAL CHANGES IN PIGEON CRYPTOCHROME 4
Fabian Schuhmann, Daniel R. Kattnig, Ilia A. Solov'yov
The Journal of Physical Chemistry B 2021, Volume 125, Issue 34, p. 9652-9659 (chosen for cover)

10. INTRODUCING PEP MCCONST—A USER-FRIENDLY PEPTIDE MODELER FOR BIOPHYSICAL APPLICATIONS
Fabian Schuhmann, Vasili Korol, Ilia A. Solov'yov
Journal of Computational Chemistry 2021, Volume 42, Issue 8, p. 572-580

PRESENTATIONS/POSTERS

Berlin, Germany	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS DPG Frühjahrstagung **2024**
Copenhagen, Denmark	INTRODUCING THE AUTOMATED LIGAND SEARCHER (ALISE) Joint Symposium 2024 - Junior ISBUC and Young Medical Chemists **2024**
Copenhagen, Denmark	STRUCTURAL REARRANGEMENTS OF PIGEON CRYPTOCHROME 4 UNDERGOING A COMPLETE REDOX CYCLE DANEMO Symposium **2024**
Odense, Denmark	STRUCTURAL REARRANGEMENTS OF PIGEON CRYPTOCHROME 4 UNDERGOING A COMPLETE REDOX CYCLE PhyLife Seminar, invited by Prof. Himanshu Khandelia **2024**
Copenhagen, Denmark	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS Advanded Methods in MD **2023**
Copenhagen, Denmark	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS Linderstrøm-Lang Centre Symposium **2023**
Copenhagen, Denmark	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS ISBUC Anual Meeting **2023**
Cambridge, United Kingdom	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS Isaac Newton Institute, Workshop: USMW02 **2023**
Kraków, Poland	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS BioNano 8, **2023**
Egmond aan Zee, Netherlands	ALISE: AN IMPROVED AND AUTOMATED VIRTUAL DRUG SCREENING PROCEDURE BioSB, **2023**
Amsterdam, Netherlands	THE SAME, BUT DIFFERENT – DISCOVERING DIFFERENCES BETWEEN NEUTROPHIL ELASTASE AND CATHEPSIN G SIAM CSE 2023, **2023**
Borstel, Germany	INTRODUCING SIMBOLS - SIMILARITY MEASURES FOR BIOLOGICAL SYSTEMS 14th North German Biophysics Meeting, **2023**
Oldenburg, Germany	COARSE GRAINED PIGEON CRYPTOCHROME AND ITS CONFORMATIONAL CHANGES ERC Quantum Birds, **2023**
Copenhagen, Denmark	THE SAME, BUT DIFFERENT – DISCOVERING DIFFERENCES BETWEEN NEUTROPHIL ELASTASE AND CATHEPSIN G ISBUC Symposium, **2022**
Heidelberg, Germany	THE SAME, BUT DIFFERENT – DISCOVERING DIFFERENCES BETWEEN NEUTROPHIL ELASTASE AND CATHEPSIN G ECMTB 2022, **2022**
Copenhagen, Denmark	THE SAME, BUT DIFFERENT – DISCOVERING DIFFERENCES BETWEEN NEUTROPHIL ELASTASE AND CATHEPSIN G Topical Meeting 2022, **2022**
Paris, France	CONFORMATIONAL CHANGES IN PIGEON CRYPTOCHROME 4 FENS 2022, **2022**
Exeter, United Kingdom	CONFORMATIONAL CHANGES IN PIGEON CRYPTOCHROME 4 Living Systems Institute Ph.D. Seminar, **2022**
Oxford, United Kingdom	CONFORMATIONAL CHANGES IN PIGEON CRYPTOCHROME 4 ERC Quantum Birds, **2022**
Santa Margherita Ligure, Italy	VIKING AND ITS FEATURED MULTISCALE TOOLS DySon-ISACC 2021, **2021**
Copenhagen, Denmark	CONFORMATIONAL CHANGES IN PIGEON CRYPTOCHROME 4 Topical Meeting 2021, **2021**
Copenhagen, Denmark	USER-FRIENDLY PEPTIDE MODELER FOR BIOPHYSICAL APPLICATIONS Topical Meeting 2021, **2020**

TEACHING EXPERIENCE

(Co)-supervisor · (Co)-supervision of **2** Bachelor students

Teacher 2023 · Carl von Ossietzky University Oldenburg · In charge of a semester-accompanying introduction to Python and teaching assistant for the module "Einführung in die theoretische Physik"

Teacher 2021 · Carl von Ossietzky University Oldenburg · In charge of a two-weeks mathematics course to bridge the gap between school mathematics and university mathematics

Tutor 2020 · Carl von Ossietzky University Oldenburg · Mathematical Modelling for future teachers · summer term 2020

Tutor 2017-2019 · Ruhr University Bochum
Mathematics for Biologists · winter term 18/19
Mathematics for Engineers II · summer term 18
Mathematics for Engineers I · winter term 17/18

Assistant 2016-2018 · Hochschule Bochum · 'Institut für Mathematik und Technikdidaktik'.

Tutor 2015-2019 · Hochschule Bochum · Mathematics for Economists

INVITED PRESENTATIONS, GRANTS, HONORS, AND AWARDS

01/2024 · Invited presenter at the PhyLife Group Seminar in Odense

08/2023 · Mathematical mechanical biology: old school and new school, methods and applications, Cambridge · Award covering the workshop registration fee

02/2023 · SIAM CSE 2023, Amsterdam · received SIAM Travel Award and ESMTB Travel Award

10/2022 · Invited presenter at the ISBUC Symposium in Copenhagen

05/2022 · Research stay at the Living Systems Institute, University of Exeter · guest of Dr. Daniel Kattnig · Funded by the German Academic Exchange Service (DAAD), Program: 57595508

01/2022 · assisted in writing a successfull high performance computing application to HLRN (NPL 910,000, eqv. 241,800€)

PROFESSIONAL SERVICE

2021-2023 · Doctoral representative on the board of the Research Training School "GRK 1885 - Molecular Basis of Sensory Biology"
Carl von Ossietzky University Oldenburg

2015-2018 · Member of the Faculty Council Mathematics
Ruhr University Bochum

2014-2018 · Member of the student representations Mathematics, responsible for finances (2015-2017)
Ruhr University Bochum

COLLABORATIONS

Prof. Heloisa N. Bordallo · Experimental data and Validation · Niels Bohr Institute, University of Copenhagen, Denmark · Paper 5

Prof. Daniel R. Kattnig · Cryptochrome 4 and Coarse-Graining · Living Systems Institute, University of Exeter, United Kingdom · Papers 3,9

Dr. Leonie Ryvkin · Computational Geometry · Mathematics and Computer Science, Eindhoven University of Technology, Netherlands · Paper 2

ACHIEVEMENTS

02/2023 · OLTECH Certificate · Successfully passed the Ph.D. programme "Neurosensory Science and Systems"

02/2023 · SIAM Hackathon 2023, Amsterdam · Member of a team which made it to finals

REVIEW ACTIVITY

2023 · Computational and Structural Biotechnology Journal · 1 paper

2022 · The Journal of Physical Chemistry B · 1 paper

OTHER QUALIFICATIONS

Workshops and additional training

Workshop on finances and booking for the public sector

Trainer licence C for general sports

Workshop on teaching mathematics by ZAB at Ruhr University Bochum

Workshop on "Introduction to University Pedagogy" by the PhD School of SCIENCE, University of Copenhagen

Voluntary work

2010-2011 · Voluntary Social Year
CVJM Westbund e.V. Wuppertal

2009-2016 · Youth Badminton Trainer
TV Frisch-Auf Altenbochum e.V.

Languages

GERMAN · Native

ENGLISH · Fluent

Computer Skills

LaTeX · Advanced

PYTHON · Advanced

LINUX · Advanced

GIT · Basic

C++ · Basic

SLURM · Basic

TCL · Basic

April 2, 2024