Johannes Dreckhoff

Date of birth: 18.01.2001 | Address: Muehltalstrasse 38, 60121 Heidelberg, Germany
Phone: +49 175 7259360 | Email: jdreckhoff@aol.com | LinkedIn | GitHub | Homepage
Expected Grad. Date: December 2025

About me

I am a graduate student in theoretical physics with a strong background in math, mathematical modeling, biophysics, numerical simulations and high-performance scientific computing. I am experienced in Python and JAX and eager to apply my analytical skills to a wide range of problems.

Skills & Tools

Programming:	Strong background in Python and **JAX** as well as Numpy and SciPy, Git, GitHub
Technical Skills:	Numerical simulations, object-oriented programming, scientific computing
ML/Statistics:	Basic exposure to machine learning, stochastic modeling, optimisation
Other:	Rigorous mathematics, mathematical modeling, biophysics, statistics, translating models into software, data visualisation, data structures, lab work

Education & Relevant Courses

M.Sc. Physics, Heidelberg University (9/2024-12/2025, Grade 1.0)
- Master thesis in theoretical and computational biophysics, Schwarz-Group (Grade 1.0)

B.Sc. Physics, Heidelberg University (10/2019-7/2023, Grade 1.3)
- Bachelor thesis in theoretical biophysics, Mielke-Group (Grade 1.0)
- Internship in the Mielke-Group, on emergence of structure in non-equilibrium systems
- Exchange semester, Physics, University of Leiden (7/2023-2/2024)

Physics of Finance, University of Leiden, Dr. Diego Garlaschelli (2023-2024)
- Covered stochastic processes, market and pricing models, network theory and application of physical methods to financial systems

Abitur (A-level), Theodor Fliedner Gymnasium (8/2011-7/2019, Grade 1.0)

Projects, Research & Publications

Pattern Formation in Lipid Membranes (Bachelor Thesis, 2023)
- Used statistical mechanics to constrain differential equation solutions for pattern formation in lipid membranes
- Developed mechanism explaining formation of sharp pattern

Structural Assembly and Curvature Generation in Clathrin Networks (Master Thesis, 2025)
- Developed python based framework for the kinetic simulation of clathrin assembly and curvature generation in cellular endocytosis
- Using JAX for high performance, cluster-compatability and differentiability
- To be published on GitHub

Work Experience & Internships

Tutor for Physics, Heidelberg University (2024)
- Leading tutorials for students, explaining and solving problem sheets

Laboratory Assistant, Heidelberg University (2025)
- Guiding undergraduates through laboratory experiments

Internship @ German Aerospace Center (DLR) (2018)

Internship @ Engineering Office „Baues & Wicht“ (2018)

Invited Talks

@ Institute for Science and Technology Austria (ISTA):

- How Clathrin Bends Membranes: Insights into Structural Coat Assembly from Agent-Based Modeling

Prizes & Awards

German Physical Society (DPG) Abitur & Book Prize (2018)

- For excellent and outstanding achievements in physics

German Mathematical Society (DMV) Abitur Prize (2018)

- For outstanding achievements in mathematics

Third place @ changes.AWARD (2018)

- For creating an innovative start-up business plan with focus on sustainability

Languages

German: Native
English: Fluent (C1-C2)
French: Intermediate (B1)

Interests

Team sports, Ultimate frisbee, Music (Guitar & Piano)