

Lenard **Rommel**

M.Sc. Physics — ML, Probabilistic Numerics & PDEs (PhD Applicant)

Tübingen, Germany

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Profile & Skills

- Probabilistic ML for operators: Laplace approximation, Gaussian-process operators, and uncertainty calibration for neural operators.
- Co-author of `linox`; contributor to `laplax`.
- Strong JAX/Flax/Equinox and PyTorch background; numerical PDEs and linear operators.

Programming	Python, JAX, PyTorch, Flax/NNX, Equinox
ML & Math	Laplace Approx., Gaussian Processes (Kronecker), Operator Learning, Numerical PDEs, Linear Operators
Reproducibility	Hydra, SLURM, W&B, Snakemake, pytest, ruff, Git, Docker
Languages	English (fluent), German (native), Danish (intermediate), French (beginner)

Education

University of Tübingen — *Tübingen, Germany*

M.Sc. Physics (in progress) — *Expected Dec 2025*

- Focus on Machine Learning, Computational Physics, Probabilistic Numerics, Laplace Approximation, Neural Operators, and Gaussian Processes.

University of Tübingen — *Tübingen, Germany*

B.Sc. Physics — *2018–2024*

- Grade: 2.3 (German scale, equivalent to Good).
- Focus on Computational Physics, Numerical Hydrodynamics, Astrophysics, Quantum Mechanics, Statistics, and Machine Learning.
- Bachelor's Thesis: Finite Volume Neural Network for simple vortex models.

Technisches Gymnasium, Max-Eyth-Schule Stuttgart — *Stuttgart, Germany*

Abitur (German high school diploma) — *2015–2018*

- Grade: 2.5 (German scale).
- Focus on Mathematics, Physics, and Engineering.

Experience

University of Tübingen — *Tübingen, Germany*

Research Assistant — *Mar 2025–Present*

- Worked on uncertainty quantification methods for neural operator models for PDEs.
- Developed Gaussian Process Regression kernels (approx. Sobolev-Gaussian/Matern, approx. Sobolev-Inner Product) for operator learning tasks.
- Contributed to Laplace approximations library in JAX (laplax).

SimTech - University of Stuttgart — *Stuttgart, Germany*

Research Assistant — *Dec 2023–Mar 2025*

- Reservoir Computing with swarms (ResoBee): analysis workflows and plotting; parameter scans and reproducible pipelines (Snakemake, Docker/Singularity).
- Developed and evaluated optimizers for dynamical systems (DynOA), many-body/swarm ML; implemented comparison metrics.
- Exploratory prototypes: continuous ODE alignment and optimizer variants to de-risk ideas and tooling.

SimTech - University of Stuttgart

Stuttgart, Germany

Intern

Jul–Aug 2023

- Explored time-series prediction using classical methods (LSTM) and dynamical systems approaches (Echo State Networks, swarm systems).

Independent / Academic Projects

Remote

Student Developer (Project Work)

2022–2023

- Implemented finite difference library in JAX (fdx).
- WG-Gesucht BOT, built Python application with executables (.app/.exe) for non-programmers.

Projects & Publications

ICML 2025 Workshop on Championing Open-source Development in ML (CODEML '25)

Vancouver, Canada

laplax: Laplace Approximations with JAX

Jul 2025

- Published workshop paper and released open-source Python package for Laplace approximations in JAX, designed for modularity and research prototyping.

Co-author

Remote

linox: Linear Operators in JAX

2024–Present

- JAX library of lazy linear operators (e.g., Diagonal, Kronecker, Low-Rank, EigenD) enabling matrix-free, composable linear algebra.

Uncertainty quantification for neural operators (Master's Thesis)

- Developed uncertainty quantification methods for neural operators leveraging kernel methods; built Hydra/SLURM pipelines and W&B tracking for reproducible experiments.
- Extended linear operator library in JAX (linox) to support kernel-based methods.

Extracurricular

Gymnastics

Germany

Gymnast, Coach, and Judge

- Gymnast.
- Coach and judge (highest German certification).

German National University Gymnastics Competition

Germany

2nd Place

2025

- Achieved 2nd place in the German National University gymnastics competition (2025).