

# Mikhail Tiuterev

📍 Bonn 53119, Germany

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## Introduction

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I'm an applied scientist and physics MSc student who loves taming complex systems with machine learning, computational modeling, or a touch of clever automation. I believe innovation moves fastest when people talk plainly, work together turning big questions into small & doable steps. Even in the middle of code or simulations, I try to keep the general goal in my mind.

Always learning. Always building (sometimes even with a little optimism).

## Education

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### M.Sc. University of Bonn, Physics

- GPA: 2.2
- IT courses GPA: 1.3

Bonn, Germany

Nov 2023 – approx. Apr 2026

### B.Sc. Saint-Petersburg State University, Applied Math & Physics

- Graduated with distinctions
- GPA: 4.9/5.0 (**Top 1%**)
- Awarded an academic scholarship
- **Thesis:** Analysis of numerical models describing the aging of lithium-ion batteries due to the formation of a solid-electrolyte interface layer

Saint-Petersburg, Russia

Sep 2019 – Jul 2023

[github.com/miketio/comsol\\_battery](https://github.com/miketio/comsol_battery) ↗\*

## Experience

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### GET Racing — Aerodynamics Team Member

- Designed aerodynamic components (**Creo**) and manufactured carbon-fiber aero parts.
- Contributed to a **30%** increase in downforce and improved manufacturing quality.

Dortmund, Germany

Jan 2025 – now

### University of Bonn — Research Assistant

- Automated laser experiment setup and integrated a Python/PyQt5 **multi-threaded controller** for real-time intensity control.
- Applied **optimization methods** (Nelder–Mead, Adam) to improve system performance and setup reliability.

Bonn, Germany

Aug 2024 – Oct 2024

## Publications

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### The combined effect of a corona discharge and moisture on hydrophobicity of silicone rubber

May 2022

K.D. Poluektova, S.A. Vasilkov, **M.I. Tiuterev**

## Competitions & Hackathons

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<b>DeepRacer Cup</b> (Audi & AWS), Top 20 Finalist	Aug 2025 - Oct 2025
<ul style="list-style-type: none"><li>• <b>Topic:</b> Autonomous racing with <b>reinforcement learning</b></li><li>• Optimized (<b>Metropolis-Hastings</b>) action-space (race line, speed, steering); ran local <b>PyTorch</b> simulations for the reward function optimization; deployed models on AWS.</li><li>• Got position 19 in the finals out of 400 participants.</li></ul>	
<b>Tech Arena</b> — Huawei (Sweden) Top 7 Finalist	Jul 2025 - Aug 2025
<ul style="list-style-type: none"><li>• <b>Topic:</b> AI-enabled SVD operator for wireless communications (<math>128 \times 128 \rightarrow</math> rank-64)</li><li>• Built a <b>hybrid CNN &amp; Transformer</b> model; optimized compute (&lt;8M MACs) and placed 7/80.</li></ul>	
<b>Tech Arena</b> — Huawei (Nuremberg 2024), 3rd place	Sep 2024 - Jan 2025
<ul style="list-style-type: none"><li>• <b>Topic:</b> State-of-Charge (SoC) estimation from noisy voltage/current</li><li>• Implemented an <b>Extended Kalman Filter</b> and tuned parameters (<b>Nelder-Mead</b>) for accurate SoC estimation.</li></ul>	
<b>Other hackathons</b>	2024 - 2025
<ul style="list-style-type: none"><li>• <b>IFM Hackathon 2025</b> (1st) — RFID initialization app with SAP BTP middleware integration.</li><li>• <b>Huawei Tech Arena</b> (Nuremberg 2025, ongoing) — Battery Energy Storage System (BESS) energy optimization (SciPy LP for DA/FCR/aFRR).</li><li>• <b>DFL Hackathon</b> — dynamic pricing (Bellman eqn + Monte Carlo simulations).</li><li>• <b>RWTH Mining Hackathon</b> (3rd) — on-demand 3D spare parts delivery strategy.</li><li>• <b>NKU Hackathon</b> (final) — flood simulation GUI.</li><li>• <b>World Engineering Day</b> — climate-resilience solutions for smallholder farming.</li><li>• <b>IFM Hackathon 2024</b> (final) — racing telemetry ML for lap-time prediction.</li></ul>	

## Skills

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### Programming Languages / Tools

Python (numpy, scipy, pandas, PyTorch, TensorFlow, scikit-learn, matplotlib, etc), MATLAB (Optimization Toolbox, Simulink, Image Processing, Curve Fitting, Statistics), Git / GitHub, Linux (bash), COMSOL (multiphysics modules, Hydrodynamics, ODE modules, etc), Autodesk (Inventor & Fusion), VBA, LaTeX, PyQt5, Arduino, Optimization solvers (SciPy linprog)

### Theoretical Background

ML & Deep Learning (supervised, unsupervised, transfer learning, model selection), NN (CNN, RNN, Transformers), Reinforcement Learning, Advanced Optimization (gradient methods, Nelder-Mead, ADAM, SGD, LP/QP formulation), Statistical Methods (hypothesis testing, regression), Time Series Analysis & Forecasting, Stochastic Processes & Monte Carlo methods, Kalman Filters, Signal & Image Processing, Finite Element Methods, Numerical Methods (linear algebra, solvers, stability), Probabilistic Modeling, Experimental Design, Data Engineering fundamentals, OOP & Software Design

### Languages

English (Professional)