

PAUL HONORE TAKAM

Applied Mathematician | Optimization Scientist | Energy Systems

@ paulhonoret@gmail.com +49 1514 2844783 Cottbus, Germany
Homepage

CORE SKILLS

- Optimization Models
- Numerical Simulation
- Mathematical Modeling
- Python & MATLAB
- Energy Systems

TECHNICAL TOOLS

Programming: Python, MATLAB

Mathematics: Calculus, Linear Algebra, Probability, Stochastic Processes

Optimization: Stochastic Optimization, Optimal Control

Modeling: Dynamical Systems, PDE and SDE-based Models

Computer skills: LaTeX, Microsoft world and Excel

LANGUAGES

English: **Fluent**

French: **Native**

German: **Intermediate**

INTERESTS

Sports: Swimming, gymnastics, cycling

PROFESSIONAL PROFILE

Analytical and results-driven mathematician (Ph.D.) with expertise in modeling, analysis, and optimization of complex systems. Experience in applying advanced mathematical and computational methods to problems in energy systems and finance. Strong collaborative and communication skills, with ability to develop innovative, data-driven solutions in interdisciplinary and dynamic environments.

EDUCATION

PostDoc | [BTU Cottbus-Senftenberg](#)

10.2023 - present Cottbus, Germany

Teaching, supervising master students, doing research in the field of stochastic optimal control and applications

PhD in Business Mathematics | [BTU Cottbus-Senftenberg](#)

10.2017 - 07.2023 Cottbus, Germany

Relevant topics: Stochastic optimization, Geothermal energy storage, Numerical analysis
PhD topic: Stochastic optimal control problems of residential heating systems with a geothermal energy storage
Overall Grade: Summa cum laude.

M.Sc. in Mathematical Sciences | [African Institute for Mathematical Sciences, AIMS](#)

07.2016 - 07.2017 Limbe, Cameroon

Relevant coursework: Software development with Python and SciPy, Sagemaths, R; Probability and Stochastic calculus, Financial Mathematics and Portfolio Optimization, Mathematical Modeling, Numerical Analysis.
Essay topic: Optimal control of a pension fund with random endowment
Overall Grade: Distinction.

M.Sc. in Applied Mathematics | [University of Dschang](#)

10.2013 - 10.2015 Dschang, Cameroon

Relevant coursework: Management and project programming, Financial Optimization and Calculus of variation, Differential Equation and Mathematical Modeling, Numerical Analysis, Dynamical systems, Sobolev's spaces, Differential, and Riemannian Geometry.
Essay topic: Stochastic Approach for Mathematical Modeling of HIV (Grade: Very good, A).

M.sc. in mathematics | [Higher Teacher Training College, HTTC bambili](#)

10.2014 - 06.2016 bamenda, cameroon

relevant coursework: probability, statistic, functional analysis, differential equation, number theory, didactic of mathematics, guidance and counseling, and psychology of learning.
Essay topic: strong convergence of Euler scheme for CIR model (grade: Very Good, A).

B.Sc. in Applied Mathematics | [University of Dschang](#)

10.2010 - 10.2013 Dschang, Cameroon

Relevant Coursework: Probability and Statistic, Algebra, Differential Calculus, Topology, Set Theory, Numerical Analysis, Complex number, and Functional Analysis.
Overall Grade: Good Pass, B.

SELECTED PROJECTS

Optimal management of microgrids with a Renewable Energy generation

📅 2024-2026

Development of a stochastic optimization model to minimize energy costs under uncertainty in the energy generation. Result: 15% reduction in operating costs in simulation studies. Tools: Python, MATLAB, optimization libraries.

Cost-Optimal Control of a Residential Heating Systems with a Geothermal

📅 2023-2025

Developed and analyzed stochastic optimal control models for residential heating systems equipped with geothermal energy storage. Implemented accurate simulations and reduced-order models. Results published in *Energies* (2025), *J. Eng. Math* (2024), *MMA Sciences* (2024), and *Int. J. Dynam. Control* 13, 424 (2025). Tools: MATLAB

Simulation and Model Reduction of Geothermal Energy Storage Systems

📅 2022-2023

Numerical analysis and simplification of complex thermal models to accelerate simulations. Result published in *MMA Sciences* (2024): 80% reduction in computation time with unchanged accuracy. Tools: MATLAB, numerical analysis, PDE modeling.

Data-Driven Scenario Development (DiDaT Project)

📅 2020-2022

Contribution to an interdisciplinary project with ETH Zurich on digital sustainability assessment. Development of participatory tools for data analysis and scenario evaluation. Tools: Python, HTML, JavaScript, SQL, PHP.

WORK EXPERIENCE

Research Associate | [BTU Cottbus-Senftenberg](#)

📅 Since 2017

📍 Cottbus, Germany

- Development of mathematical models for the optimization of energy systems
- Numerical simulations of SDEs and PDEs in MATLAB.
- Supervised Bachelor's and Master's students in applied mathematics and engineering-related topics.
- Collaboration in interdisciplinary research projects, including cooperation with ETH Zurich

Teaching Assistant (Tutorial Instructor) in Applied Mathematics | [BTU Cottbus-Senftenberg](#)

📅 2017–Present

📍 Cottbus, Germany

- Delivered lectures/exercise sessions in **engineering mathematics**, including calculus, probability theory, Statistic, and stochastic processes.
- Designed problem sets, tutorials, and examinations to support student learning and assessment.
- Integrated real-world applications (energy systems, optimization) into teaching to enhance student engagement.

Visiting Lecturer | [AIMS-Cameroon](#)

📅 2024–2026

📍 Limbe, Cameroon

- Delivered an intensive Master's-level course on *Stochastic Processes and Optimal Control*.
- Taught core topics in stochastic processes, including Markov chains, stochastic calculus, and stochastic differential equations, with applications to finance and engineering.
- Developed course materials and guided students through advanced mathematical modeling techniques.

PUBLICATIONS

1. **P. H. Takam**, Ralf Wunderlich. *Numerical simulation of the input-output behavior of a geothermal energy storage*. *Energies*, 18, 1558 (2025).
2. **P. H. Takam**, Ralf Wunderlich. *Cost-optimal management of a residential heating system with geothermal energy storage under uncertainty*. *Int. J. Dynam. Control* 13, 424 (2025).
3. **P. H. Takam**, Nathalie Fruiba. *Stochastic Optimal Control Problems for the Cost-Optimal Management of a Standalone Microgrid*. *arXiv:2511.00167* (2025).
4. **P. H. Takam**, Ralf Wunderlich. *Model order reduction for the input-output behavior of a geothermal energy storage*. *Journal of Engineering Mathematics*, 12, 148 (2024).
5. **P. H. Takam**, Ralf Wunderlich, Olivier Menoukeu Pamen. *Modeling and simulation of the input-output behavior of a geothermal energy storage*. *Mathematical Methods in the Applied Sciences*, 371-396, 47 (2024).

SELECTED TALKS & CONFERENCES

- **Stochastic Analysis Seminar**, University of Jena, Germany, April 2026.
Talk: *A Quantization-Based Approach to Microgrid Optimization under Uncertainty*.
- **AIMS-Cameroon Weekly Seminar**, Cameroon, March 2026.
Talk: *Optimal Management of Standalone Microgrids*.
- **Ma4SmEn25**, Berlin, Germany, November 2025.
Topic: *Mathematics for Smart Energy*.
- **17th German Probability and Statistics Days (GPSD)**, Dresden, Germany, March 2025.
Talk: *Optimal Control of Microgrids under Uncertainty*.
- **AIMS-Cameroon Seminar**, Cameroon, February 2024.
Talk: *Geothermal Energy Storage Control under Uncertainty*.
- **WPI Workshop**, Vienna, Austria, Sept 2023.
Topic: *Stochastics, Statistics, Machine Learning and Their Applications*.
- **Austrian Stochastic Days**, University of Klagenfurt, Austria, Sept 2023.
Talk: *Optimal Management of a Residential Heating System*.
- **13th SMC Workshop**, Lübeck-Travemünde, Germany, 2023.
Talk: *Stochastic Optimal Control of Thermal Energy Storage*.
- **CMIA Conference**, AIMS Ghana, 2022.
Talk: *Stochastic Optimal Control of Thermal Energy Storage*.
- **15th German Probability and Statistics Days**, Mannheim, Germany (online), 2020.
Talk: *Optimization of Thermal Energy Storage*.
- **5th Energy Finance Italia (EFI)**, Rome, Italy, 2020.

RESEARCH VISITS

- Institute of mathematics, University of Jena, April 27- 30, 2026
- AIMS-Ghana research center, July 02-August 28, 2018
- ZHAW Zurich University of Applied Sciences, Winterthur, Switzerland, March, 2018

FELLOWSHIPS & GRANTS

- AIMS-DFG Collaboration Visits Program (2024–2026)
- DAAD Doctoral Scholarship (2018–2023)
- Next Einstein Initiative Scholarship (2016–2017)

REFERENCES

- **Prof. Dr. rer. nat. habil. Ralf Wunderlich**
BTU Cottbus-Senftenberg, Institut für Mathematik, Fakultät 1,
Platz der Deutschen Einheit 1, 03046 Cottbus
Germany
email: ralf.wunderlich@b-tu.de
- **Prof. Dr. Martin Redmann**
Ulmenstraße 69, Haus 3, R 329
18057 Rostock
Tel.: (+49) 381/498 - 6661
email: martin.redmann@uni-rostock.de

July 1, 2026

A handwritten signature in black ink, appearing to be 'P. Takam', written over a horizontal line.

Dr. Paul Honore Takam