Paulin Aubert

 Apolain | Paulin Aubert | https://apolain.github.io/ | paulinaubert@orange.fr

SUMMARY

Quantitative Analyst and PhD candidate in Applied Mathematics (defense Dec. 2025), specializing in stochastic control, numerical methods, and machine learning applied to finance. Experienced in developing and implementing quantitative models through a CIFRE PhD bridging academic research and industry, with strong expertise in modeling, simulation, and risk management.

WORK EXPERIENCE

Quantitative Consultant & PhD Candidate – Exiom Partners   Nov 2021 - Present

– PhD researcher focusing on numerical methods for stochastic control, leveraging machine learning and reinforcement learning techniques. Actively involved in writing research papers and presenting results at international conferences.
– Working as a part-time Quant in industry, contributing to several projects in risk and model development:
  – **Tier-1 global bank (CCR/XVA team):** Contributing to the development of the pricing library and the automation of monitoring tests. Implementations in Python and C++.
  – **Large French retail bank (ALM team):** Led a C++/C# library rationalisation project within the ALM team. Designed a new Python library and conducted model reviews and developments covering swap, bond, and swaption pricing, yield-curve stripping, and short-rate model calibration.
  – **Multiple financial institutions (credit risk projects):** Delivered credit-risk projects including the design of credit-scoring grids and the review of provisioning methodologies for non-performing loans.
– Led the development and maintenance of internal IT tools, including a Django-based planning and recruitment platform and a self-hosted GitLab environment.

Quand intern – Exiom Partners   May 2021 - Nov 2021

Conducted research on Default Risk Charge (DRC) requirements under the Fundamental Review of the Trading Book (FRTB) framework. Developed a multi-period Merton model for credit risk analysis and performed theoretical and numerical studies of dependence structures using copula models.

EDUCATION

2022 – 2025   **PhD in Applied Mathematics** — Université Paris-Saclay
              Thesis: Learning-based numerical methods for stochastic control in finance.
2019 – 2021   **Master's Degree in Quantitative Finance** — Université Paris-Saclay

PUBLICATIONS

[1]   Paulin Aubert. *Bermudan option pricing with reinforcement learning*. To be submitted. 2025.

[2]   Paulin Aubert, Etienne Chevalier, and Vathana Ly Vath. *Optimal dividends and capital injection with self-exciting arrival of claims*. To be submitted. 2025.

[3]   Paulin Aubert, Etienne Chevalier, and Vathana Ly Vath. *Option market making with hedging-induced market impact*. To be submitted. 2025.

SKILLS

Quantitative Modeling	Stochastic control, optimal stopping, market making, credit and counterparty risk (FRTB–DRC, XVA).
Numerical Methods	Monte Carlo simulation, PDE schemes, function approximation, optimization and calibration techniques.
Programming	Python (NumPy, Pandas, SciPy, PyTorch) and C++. Software engineering with Git, CI/CD, unit testing, and Linux environments.
Scientific Rigor	Strong analytical and methodological skills developed through academic research, including paper writing, technical presentations, and structured problem-solving.
Languages	French (native), English (fluent).