

Amaury HAYAT

Contact info:

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Researcher in AI and Mathematics

Research experience

- 2025 - 2028** **KIAS Scholar - Korea Institute for Advanced Study**
> KIAS scholar for 2025-2028
- 2019 - pres.** **Professor (full since 2023) Ecole des Ponts (Institut Polytechnique de Paris)**
> Chairholder - AI for mathematics (Hi!Paris) 2026-2029
> Member of the University board for Education and Research (2022-pres)
> Habilitation 02/23
- Mar. - Apr.** **Academic guest - Peking University**
2024
- 2019 - 2020** **Research associate (on leave from Ecole des Ponts) - Rutgers University**
PI : Benedetto Piccoli
- Sept. 2018** **Academic guest - Tongji University**
- Mar. - Dec.** **Academic guest - ETH Zurich**
2017 > Member of the institute for research in Mathematics (FIM)
- Avr.-Sep.** **Research fellow - Harvard University, Capasso Group**
2014 > Work awarded by the French Academy of Sciences and Ecole Polytechnique.

Education

- 2016-2019** **Sorbonne Université, LJLL** – PhD candidate
Dissert. title: Stabilization of 1D nonlinear hyperbolic systems by boundary controls
(Advisor : Jean-Michel Coron, co-advisor: Sébastien Boyaval)
- 2014-2016** **Corps des Ponts, des Eaux et Forêts** – Master of Public Policy
- 2014-2015** **University of Cambridge, Queens' College** – MAST in applied mathematics
> with First Class Degree and Foundation Scholarship award
- 2011-2014** **Ecole Polytechnique** – Class X2011, Bsc. 2013, Eng. degree 2014, MSc. physics 2016.
- 2009-2011** **Lycée Sainte-Geneviève** – High level undergraduate program in Mathematics, Physics and Chemistry

Honors and awards

- 2025** The Atanasoff Lecture - Bulgarian Academy of Sciences (annual distinguished lecture)
- 2024** IEEE ITS Institutional Lead Award (collective, attributed to CIRCLES project)

- 2024 The L. Lorne Campbell Lecture - Queen's university (annual distinguished lecture)
- 2021 Forbes 30 under 30 - Europe (in Science & Healthcare)
- 2020 Solemn Prize of the Chancellerie des Universités de Paris (in "science, all fields")
- 2020 2019 PhD award of the European Embedded Control Institute
- 2014 Medal L.E. Rivot awarded by the French Academy of Sciences

Others: Young Talent France-China 2024, Oberwolfach research fellow / RiP 2022, Medal for National Defense, Olympiades of geoscience 2008 (1st Prize for Paris, Silver medal France).

Academic responsibilities

- 2022-pres. Representative of the full professors at Ecole des Ponts's board for Education and Research
- 2020-2024 Main organizer of the seminar of applied mathematics, Ecole des Ponts.
- 2018-2019 Representative of PhD candidates at the board of Laboratoire Jacques Louis-Lions.

Grants and projects

- 2026-2029 Hi!Paris Chair - DESCARTES (chairholder)
- 2025-2026 ANR - Tremplin StarPDE (PI, for obtaining A at step 2 of ERC application in 2024)
- 2025 PEPS JCJC - CNRS (PI)
- 2022-2023 IEA - SHYSTRAS - CNRS (PI)
- 2022 PEPS JCJC - CNRS (PI)
- 2020-2022 CIRCLES (leadership team, member)

Others: ANR Finite4SoS (2016-2019, member), NSFC Control of hyperbolic systems (2021-2025, member), ANR JCJC CDDTM (2024-2028, member).

Editorial activities

- 2025-pres Associate editor of *Differential and Integral equations*
- 2024-pres Associate editor of *Mathematics of Control, Signals, and Systems (MCSS)*
- 2024-pres Associate editor of *Acta Applicandae Mathematicae*
- 2022 Guest editor for *Networks and Heterogeneous Media* (one special issue)

Teaching

- 2023-pres. Theoretical and numerical analysis of hyperbolic systems, Sorbonne Université, graduate (M2), lectures.
- 2018-pres. Control of dynamical systems and functional analysis, Ecole des Ponts, graduate

(M1), practical exercises and tutoring (2018), lectures (2020-pres.).

Formers: Analysis and partial differential equations; Completeness and Banach spaces; Partial differential equations and finite elements. Differential calculus and measure theory. Complex analysis.

Student supervision

- 2025-pres.** Ahmad Rammal, PhD student (with Remi Munos), *Self-Improving AI for mathematics*
- 2025-pres.** Vincent Boulard, PhD student (with Emmanuel Trélat), *F-equivalence and sub-Riemannian geometric analysis for the control and stabilization of PDEs*
- 2025-pres.** Grégoire Elinck, PhD student (with Pierre Lissy), *F-equivalence and output feedback stabilization of PDEs*
- 2024-pres.** François Charton, PhD student, *Language models for mathematics*
- 2023-2026** Fabian Glöckle, PhD student (with Gabriel Synnaeve and Timothy Gowers), *Automated theorem proving using proof context*
- 2022-2025** Yating Hu, PhD student (with Peipei Shang), *Stabilization of networks of Saint-Venant equations* received the **Shanghai Outstanding graduate Award 2025**, the **Tongji University 2024 Outstanding Doctoral Scholarship** and **Tongji University 2024 Excellent Student Model Award**
- 2022-2025** Epiphane Loko, PhD student (with Antoine Chaillet), *Stability of infinite dimensional systems and disturbances*
- 2021-2024** Nathan Lichtlé, PhD student (with Alexandre Bayen), *Reinforcement Learning to stabilize mathematical models*, received the **UC Berkeley Fellowship**, the **Paul Caseau Prize 2025 (national prize)**, and the **Grand PhD Prize of Ecole des Ponts (university prize)**
- 2020-2023** Jean Cauvin-Vila, PhD student (with Virginie Ehrlacher), *Cross-diffusion systems in moving boundary domains*, **finalist for the Grand PhD Prize of Ecole des Ponts.**
- 2025** Antoine Peyronnet, Master student
- 2024** Gwenaëlle Léon, Master student
- 2023/2024** Vincent Boulard, undergraduate researcher / master student, received the **Junior Fermat Prize**
- 2022** Fabian Glöckle, research associate (with Timothée Lacroix)
- 2022** Tinhinane Mezair, Master thesis.
- 2021** Epiphane Loko, Master thesis.
- 2020** Nicolas Kardous, master student intern (with Alexandre Bayen and Alexandre Keimer)

2019-2020 Sydney Truong, undergraduate researcher (with Benedetto Piccoli), received the **Dean's Undergraduate Research Prize** and the **Mathematical Sciences Scholarship Award** “for best undergraduate research”

Conferences and workshops organization

- 2026 Partial differential equations, optimal design and numerics, Benasque (organizer)
- 2026 AI and Mathematics Summer School (one month), Korea IAS (organizer)
- 2026 LLM and mathematics, IHES, (organizer)
- 2026 Algebraic Geometry and Machine Learning, ICARM (organizer)
- 2026 Mathematics and AI workshop, Aarhus IAS (Scientific committee)
- 2025 MATRIX - MFO (Oberwolfach): Machine Learning and AI for Mathematics (organizer)
- 2025 LLM and mathematics, IHES, (organizer)
- 2025 [KIAS: Machine learning and Mathematics](#) (Program Committee)
- 2024 [Math - AI workshop at ICML](#) (co-Program Chair)
- 2023 [ICIAM minisymposium: Control and stabilization of PDEs](#) (organizer)
- 2021 1st CIRCLES workshop on Traffic and Autonomy (main organizer)

Talks and seminars

I gave 33 talks in conferences. Below is a selection focusing on the last three years (as of 01/26), the full list can be found [here](#).

- 2026 [15th ACM SIGPLAN International Conference on Certified Programs and Proofs](#) (CPP 2026), Rennes (plenary speaker)
- 2025 [The Mathematics of Scientific Machine Learning and Digital Twins](#), Erice (plenary speaker)
- 2025 [Workshop AI for Maths - SMF, SMAI and SFdS](#), Institut Henri Poincaré (invited speaker)
- 2025 [International Conference on Machine Learning - AI for Math workshop](#), Vancouver (invited speaker)
- 2025 [Control of Systems Governed by Partial Differential Equations \(CPDE 2025\)](#), Beijing (plenary speaker)
- 2025 [AI for Mathematics and Theoretical Computer Science](#), Simons Institute, Berkeley (invited speaker)
- 2025 [AI and Math](#), ENS Paris - Paris Sciences & Lettres, Paris (invited speaker)

- 2024 [Mathematics and ML Workshop](#), Harvard CMSA (invited speaker, joint talk with J. Avigad, A. Davies, M. Matchett Wood).
- 2024 [2nd AMS - UMI joint meeting](#), Palermo (session speaker)
- 2024 [AI and Pure Mathematics Conference](#), IMSA Miami, (distinguished invited speaker)
- 2024 [Mathematics for and by Large Language Models](#), IHES (invited speaker)
- 2023 [Control Methods in Hyperbolic Partial Differential Equations workshop](#), Oberwolfach (invited speaker)
- 2023 [Traffic and Autonomy conference](#), Maiori (senior invited speaker)
- 2022 [Formal Language and AI in Mathematics](#), IHP, Paris (invited speaker)

Seminars and colloquia: I gave 45 talks in seminars, colloquia, invited or distinguished lectures at different institutions among which: Bulgarian Academy of Sciences, Cambridge, Chinese Academy of Sciences, Collège de France, ENS Paris, EPFL, FAU Erlangen, Fudan, Korea IAS, Peking University, BiCMR, Queen's, UC Berkeley, University of Tokyo, etc. The full list can be found [here](#).

Publications

I am the author of 51 papers (39 accepted or published, 12 preprints as of 04/2026), one book chapter, and the editor of one book. The full list can be found [here](#).