Amaury HAYAT

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Researcher in Mathematics

Research experience

2025 - 2028   **Visiting faculty - Korean Institute for Advanced Studies**
> KIAS scholar for 2025-2028

2019 - pres.   **Professor (full since 2023) Ecole des Ponts (Institut Polytechnique de Paris)**
> Chairholder - AI for mathematics (Hi!Paris) 2026-2028
> Member of the University board for Education and Research (2022-pres)
> Main organizer of the seminar of applied mathematics (2020-2024)
> Faculty at CERMICS (Habilitation 02/23)

Mar. - Apr. 2024   **Academic guest - Peking University**
> Work on F-equivalence

2019 - 2020   **Research associate (on leave from Ecole des Ponts) - Rutgers University**
PI : Benedetto Piccoli

Sept. 2018   **Academic guest - Tongji University**

Mar. - Dec. 2017   **Academic guest - ETH Zurich**
> Member of the institute for research in Mathematics (FIM)

Avr.-Sep. 2014   **Research fellow - Harvard University, Capasso Group**
> 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

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**

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 - SHYSTRA - 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**

2024-pres. François Charton, PhD student, *Language models for mathematics*

2023-pres. Fabian Glöckle, PhD student (with Gabriel Synnaeve and Timothy Gowers), *Automated theorem proving using proof context*

2023-pres. 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-pres. 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**

2020-2023 Jean Cauvin-Vila, PhD student (with Virginie Ehrlacher), *Cross-diffusion systems in moving boundary domains*

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**

2025 MATRIX - MFO (Oberwolfach): Machine Learning and AI for Mathematics (organizer)

2025 IHES: LLM and mathematics (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 23 talks in conferences. Below is a selection focusing on the last two years (as of 02/25), the full list can be found [here](#).

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

_____   **Publications**

I am the author of 43 papers (38 accepted or published, 5 preprints as of 05/2025) and one book chapter. The full list can be found [here](#).