

Pierre Lissy

Research Director

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Born on 14/08/1986 in Tours (France). French nationality.

Current position

2026– **Research Director**, CERMICS, École nationale des ponts et chaussées, Institut Polytechnique de Paris, France, Permanent senior civil-service research position; full-professor equivalent, with no mandatory teaching duties.

Previous positions

2023–2026 **Junior Professor**, CERMICS, École nationale des ponts et chaussées, Institut Polytechnique de Paris, France, Tenure-track chair.

2014–2023 **Associate Professor**, CEREMADE, Université Paris-Dauphine, France

Education

- 2021 **Habilitation to Supervise Research (HDR)**, Université Paris-Dauphine, Highest academic qualification in France, required to supervise PhD students as main supervisor and to apply for full professorships.
- 2010–2014 **PhD in Mathematics**, Université Pierre et Marie Curie (Paris), Advisor: Jean-Michel Coron. Thesis defended December 11, 2013.
- 2009–2010 **Agrégation in Mathematics**, ENS de Cachan, Highly competitive national examination for teaching positions in mathematics; ranked 22nd nationwide.
- 2009 **Admission to the ENS Cachan 3A competitive exam**, Ranked 7th
- 2008–2009 **Master's degree in Partial Differential Equations**, Université Paris-Sud (Orsay), Mention: Assez Bien.
- 2007–2008 **Bachelor (L3) and Master 1**, Joint ENS-Cachan / Paris-7 program, Mention: Bien.
- 2007 **Admission to École Normale Supérieure de Cachan as an external student**
- 2004–2007 **CPGE (MPSI then MP*)**, Lycée Descartes, Tours, Two-year intensive preparatory program for national competitive exams to elite engineering and research schools.
- 2004 **Scientific Baccalaureate**, Lycée Jean Monnet, Joué-lès-Tours, Mention: Très Bien.

Research interests

My research mainly focuses on analysis, controllability, stabilization and observation for partial differential equations, with applications to numerical controllability and road traffic control.

Keywords: PDE control and stabilization; controllability and observability; control cost; exponential and polynomial stabilization; backstepping methods; robustness and insensitizing controls; coupled systems; degenerate or hypoelliptic equations; spectral, complex and harmonic analysis methods; numerical analysis for PDE controllability; applications to road traffic.

Publications in international peer-reviewed journals

- [32] Exact output tracking for the one-dimensional heat equation and applications to the interpolation problem in Gevrey classes of order 2 (with Lucas Davron), **Discrete and Continuous Dynamical Systems – Series A**, 58 (2027).
- [31] Theoretical and numerical study of the convergence of Luenberger observers for a linearized water wave model (with Lucas Perrin), **SIAM Journal on Control and Optimization**, accepted, 2026.
- [30] Hybrid range inclusions: a generalization of Douglas’ theorem, with an application to control theory, **Journal of Mathematical Analysis and Applications**, 564 (2026), 130909.
- [29] Robust control of linear systems under small parameter variations (with Sylvain Ervedoza and Yannick Privat), **Chinese Annals of Mathematics, Series B**, to appear in the special issue in honor of Jean-Michel Coron’s 70th birthday, 2026.
- [28] Null-controllability of underactuated linear parabolic-transport systems with constant coefficients (with Armand Koenig), **Annales de l’Institut Fourier**, Online first, 2026.
- [27] Null controllability of the 1D heat equation with interior inverse square potential (with Tanguy Lourme), **Journal of Differential Equations**, 463 (2026), 114221.
- [26] Controllability of a coupled wave system with a single control and different speeds (with Jingrui Niu), **Journal de Mathématiques Pures et Appliquées**, 205 (2026), 103808.
- [25] A non-controllability result for the half-heat equation on the whole line based on the prolate spheroidal wave functions and its application to the Grushin equation, **Journal of Differential Equations**, 433 (2025), 113306.
- [24] Rapid stabilization of a degenerate parabolic equation using a backstepping approach: the case of a boundary control acting at the degeneracy (with Claudia Moreno), **Mathematical Control and Related Fields**, 14 (2024), 1007–1032.
- [23] Necessary conditions for local controllability of a particular class of systems with two scalar controls (with Laetitia Giraldi, Clément Moreau and Jean-Baptiste Pomet), **ESAIM: Control Optimisation and Calculus of Variations**, 30 (2024), Article 4.
- [22] Insensitizing controls for the heat equation with respect to boundary variations (with Sylvain Ervedoza and Yannick Privat), **Journal de l’École Polytechnique – Mathématiques**, 9 (2022), 1397–1429.
- [21] State-constrained controllability of linear reaction-diffusion systems (with Clément Moreau), **ESAIM: Control Optimisation and Calculus of Variations**, 27 (2021), 70.
- [20] A Fredholm transformation for the rapid stabilization of a degenerate parabolic equation (with Ludovick Gagnon and Swann Marx), **SIAM Journal on Control and Optimization**, 59 (2021), 3828–3859.
- [19] Bilinear local controllability to the trajectories of the Fokker–Planck equation with a localized control (with Michel Duprez), **Annales de l’Institut Fourier**, 72 (2022), 1621–1659.
- [18] Optimal approximation of internal controls for a wave-type problem with fractional Laplacian using finite-difference method (with Ionel Roventa), **Mathematical Models and Methods in Applied Sciences**, 30 (2020), 439–475.
- [17] Insensitizing control for linear and semi-linear heat equations with partially unknown domain (with Yannick Privat and Yacouba Simporé), **ESAIM: Control Optimisation and Calculus of Variations**, 25 (2019), 50.
- [16] Internal controllability for parabolic systems involving analytic non-local terms (with Enrique Zuazua), **Chinese Annals of Mathematics, Series B**, 39 (2018), 1–14.
- [15] Addendum to “Local Controllability of the Two-Link Magneto-Elastic Micro-Swimmer” (with Laetitia Giraldi, Clément Moreau and Jean-Baptiste Pomet), **IEEE Transactions on Automatic Control**, 63 (2018), 2303–2305.

- [14] Internal observability for coupled systems of linear partial differential equations (with Enrique Zuazua), **SIAM Journal on Control and Optimization**, 57 (2019), 832–853.
- [13] Positive and negative results on the internal controllability of parabolic equations coupled by zero and first order terms (with Michel Duprez), **Journal of Evolution Equations**, 18 (2018), 659–680.
- [12] Optimal filtration for the approximation of boundary controls for the one-dimensional wave equation (with Ionel Roventa), **Mathematics of Computation**, 88 (2019), 273–291.
- [11] Non-localization of eigenfunctions for Sturm–Liouville operators (with Thibault Liard and Yannick Privat), **Journal of Differential Equations**, 264 (2018), 2449–2494.
- [10] A Kalman rank condition for the indirect controllability of coupled systems of linear operator groups (with Thibault Liard), **Mathematics of Control, Signals, and Systems**, 29 (2017), Article 9.
- [9] The cost of the control in the case of a minimal time of control: the example of the one-dimensional heat equation, **Journal of Mathematical Analysis and Applications**, 451 (2017), 497–507.
- [8] Construction of Gevrey functions with compact support using the Bray–Mandelbrojt iterative process and applications to the moment method in control theory, **Mathematical Control and Related Fields**, 7 (2017), 21–40.
- [7] Singular optimal control of a 1-D parabolic-hyperbolic degenerate equation (with Mamadou Gueye), **ESAIM: Control Optimisation and Calculus of Variations**, 22 (2016), 1184–1203.
- [6] Indirect controllability of some linear parabolic systems of m equations with $m - 1$ controls involving coupling terms of zero or first order (with Michel Duprez), **Journal de Mathématiques Pures et Appliquées**, 106 (2016), 905–934.
- [5] Explicit lower bounds for the cost of fast controls for some 1-D parabolic or dispersive equations, and a new lower bound concerning the uniform controllability of the 1-D transport-diffusion equation, **Journal of Differential Equations**, 259 (2015), 5331–5352.
- [4] An application of a conjecture due to Ervedoza and Zuazua concerning the observability of the heat equation in small time to a conjecture due to Coron and Guerrero concerning the uniform controllability of a convection-diffusion equation in the vanishing viscosity limit, **Systems and Control Letters**, 69 (2014), 98–102.
- [3] On the cost of fast controls for some families of dispersive or parabolic equations in one space dimension, **SIAM Journal on Control and Optimization**, 52 (2014), 2651–2676.
- [2] Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components (with Jean-Michel Coron), **Inventiones Mathematicae**, 198 (2014), 833–880.
- [1] A link between the cost of fast controls for the 1-D heat equation and the uniform controllability of a 1-D transport-diffusion equation, **Comptes Rendus Mathématique**, 350 (2012), 591–595.

Preprints, submitted papers, or papers under revision in peer-reviewed journals

- [4] Optimal cost of fast boundary controls for the one-dimensional heat equation, preprint, arXiv:2608.08041, 2026.
- [3] Control and stabilization of cascade coupled systems: application to a 1-D heat and wave coupled system (with Lucas Davron and Swann Marx), submitted, 2026.
- [2] Effective multipliers for weights whose logs are Hölder continuous. Application to the cost of fast boundary controls for the 1D Schrödinger equation, submitted, 2025.
- [1] Controllability of a bent 3-link magnetic microswimmer (with Laetitia Giraldi, Clément Moreau and Jean-Baptiste Pomet), long-term preprint, 2016.

Book chapter

- [1] The fictitious control method for the internal controllability of underactuated system of PDEs, 13th Young Researchers Workshop on Geometry, Mechanics and Control, Mathematical Texts of the University of Coimbra, Volume 48, pp. 87–118.

Peer-reviewed conference proceedings

- [1] Traffic Flow Reconstruction from Limited Collected Data (with Nail Baloul, Amaury Hayat and Thibault Liard), **Proceedings of the 64th IEEE Conference on Decision and Control (CDC)**, 2025, Rio, 7981–7986.

PhD and postdoctoral supervision

6 PhD theses (3 ongoing), 1 postdoc.

- 2025– **Co-supervision (50%)** (with Amaury Hayat) of the **PhD thesis** of Grégoire Elinck. Topic: stabilization of PDE systems: F-equivalence and state-feedback stabilization.
- 2024– **Co-supervision (50%)** (with Amaury Hayat and Thibault Liard) of the **PhD thesis** of Nail Baloul. Topic: reconstruction and management of road traffic using mathematical analysis and machine learning tools.
- 2023– **Co-supervision (34%)** (with Olivier Glass and Swann Marx) of the **PhD thesis** of Lucas Davron. Topic: controllability of induced earthquakes.
- 2022–2025 **Co-supervision (50%)** (with Dario Prandi) of the **PhD thesis** of Roman Vanlaere. Topic: controllability properties of the heat equation on sub-Riemannian manifolds. Roman Vanlaere is now a **Postdoc** at the University of Seville (Spain).
- 2019–2021 **Scientific supervisor** of the **Postdoc** of Armand Koenig (FSMP-PSL funding).
- 2018–2021 **Co-supervision (50%)** (with Nicolas Burq) of the **PhD thesis** of Jingrui Niu. Topic: controllability of coupled wave systems. Jingrui Niu is now an **Assistant Professor** at Harbin University (China).
- 2017–2020 **Co-supervision (33%)** (with Laetitia Giraldi and Jean-Baptiste Pomet) of the **PhD thesis** of Clément Moreau. Topic: controllability for systems arising in biology. Clément Moreau is now a **CNRS Researcher** at Centrale Nantes.
- 2014–2016 **Significant contribution** (no formal role as supervisor, but a substantial contribution to the joint work and scientific supervision, as evidenced by two publications) to the **supervision** of Thibault Liard. PhD advisors: Alain Haraux and Yannick Privat.

Supervision of internships and other mentoring activities

1 year as a visiting PhD student, 6 Master's (M2) internships, 1 ENPC gap-year internship, 3 undergraduate/M1-level internships.

- 2026– **Co-supervision (50%)** (with Yannick Privat) of the M2 internship of Luis Gualavisi. Topic: optimization of control or observation regions.
- 2025 **Co-supervision (50%)** (with Amaury Hayat) of the M2 internship of Grégoire Elinck. Topic: stabilization of PDE systems via F-equivalence.
- 2024 **Full supervision (100%)** of one year of PhD work of Hui Xu (visiting PhD student, funded by CSC China).
- 2024 **Full supervision (100%)** of an ENPC gap-year internship of Tanguy Lourme.
- 2023 **Full supervision (100%)** of the CPES2 internship of Arthur de la Croix de Castries.
- 2023 **Co-supervision (33%)** (with Davide Barilari and Swann Marx) of the M2 internship of Lucas Davron.

- 2022 **Co-supervision (50%)** (with Dario Prandi) of the M2 internship of Roman Vanlaere. Topic: non-controllability of a class of degenerate parabolic equations.
- 2020 **Supervision** of an M1-level internship of Zakaria Bensaïd. Topic: non-controllability of the half-heat equation.
- 2020 **Supervision** of the L3 internship of Pierrick Le Vourc'h (ENS Lyon student). Topic: control cost for finite-dimensional linear systems.
- 2018 **Co-supervision (50%)** (with Yannick Privat) of the Master's (M2) internship of Béranger Hug. Topic: optimization of control or observation regions.
- 2016 **Co-supervision (33%)** (with Laetitia Giraldi and Jean-Baptiste Pomet) of the **Master's (M2) internship** of Clément Moreau (ENS Cachan student).

Graduate/research-level courses and teaching abroad

- Jul. 2026 **Fourier Analysis Beyond the Real Line, and Applications**, *Tongji Summer School in Mathematics*, Shanghai, China, 12h
- Jul. 2025 **Uncertainty principles in harmonic analysis, and some applications**, *Tongji Summer School in Mathematics*, Shanghai, China, 12h
- Apr. 2025 **Polynomial stabilization**, *Spring School of the GDR MACS*, Aussois, France, 6h
- Feb. 2024 **Logvinenko–Sereda uncertainty principle and applications in control theory**, *Workshop on control and shape optimization*, Université de Ziguinchor, Senegal, 6h
- Winter 2023 **Introduction to control theory**, *M2 MATH*, Université Paris-Dauphine, 12h
- Sep. 2022 **Spectral shape optimization**, *CIMPA School "Partial Differential Equations (PDEs) and Calculus of Variations"*, Gangbo, Benin, Doctoral-level course
6h
- Dec. 2018 **On the fictitious control method**, *Young Researcher Workshop on GMC*, Coimbra, Portugal, Research-level course
4h
- May 2018 **Introduction to spectral theory**, *CIMPA School on PDEs and geometry*, Jijel, Algeria, M2/doctoral-level course
9h

Teaching

- 2023–2024 **Small-group classes: Analysis of partial differential equations**, *École nationale des ponts et chaussées*
- 2023– **Course on evolution equations (2nd year)**, *École nationale des ponts et chaussées*
- 2022–2023 **Course (L3 Mathematics)**, *Functional analysis and Hilbert space methods*, Université Paris-Dauphine
- 2022–2023 **Course (M2 MATH)**, *Introduction to control theory*, Université Paris-Dauphine
- 2022–2023 **Course (CPES 2)**, *Topology and analysis*, Université PSL
- 2020–2021 **Course (Master 1, Applied Mathematics)**, *Geometry and dynamics*, Université Paris-Dauphine
- 2017–2023 **Courses and tutorials (Master 1 MMD-MA and Applied Mathematics)**, *Functional analysis and PDEs*, Université Paris-Dauphine
- 2014–2017, 2018–2019 **Courses, tutorials and labs (Master 1 MMD-MA)**, *Numerical methods for time-dependent problems*, Université Paris-Dauphine
- 2014–2023 **Various tutorials (L2–L3 MIDO)**, *Probability, analysis, differential calculus, functional analysis*, Université Paris-Dauphine

- 2011–2014 **Teaching assistantship at Polytech'UPMC (ST3, ELI3, EI-SE3, ROB3)**, *Linear algebra, Hilbertian analysis, distributions and Fourier transform, probability*
- 2011–2012 **Grading for a mock CAPES exam, Master 1 Teaching**, Université Pierre et Marie Curie, *CAPES is the French national competitive examination for recruiting secondary-school teachers.*
- 2010–2011 **Lectures and tutorials (DEGEAD1)**, *Real analysis in one and two variables; unconstrained and constrained optimization*, Université Paris-Dauphine

Administrative and scientific responsibilities

- 2025– Member of the **Board of Directors** of SMAI, **Treasurer since July 2026**.
French Society for Applied and Industrial Mathematics, comparable to SIAM in the United States.
- 2025– AMIES correspondent at CERMICS.
AMIES (Agence pour les Mathématiques en Interaction avec l'Entreprise et la Société) is a French national initiative fostering collaborations between mathematicians and industry.
- 2024 Member of the **Scientific Committee** of the EUR school "Spectral Theory, Control and Inverse Problems" and of the conference "Control of PDEs and related topics" (June–July 2025, Toulouse).
- 2024– Director of the **Paris Applied Maths Semester (PAMS)**.
Exchange program hosting international M1-level students for one semester at the IMI Department, École nationale des ponts et chaussées.
- 2025– External member of the **CSI** for two students: Mathilda Trabut (Toulouse, advisors Franck Boyer and Morgan Morancey), Ana-Maria Orita (Clermont-Ferrand, advisors Nicolae Cîrdea and Ionel Roventa).
- 2024–2027 Internal member of the **CSI** for 4 students, OPTI team, CERMICS.
- 2022–2023 **Elected member** of the Department Council, MIDO Department.
- 2017–2023 **Coordinator** for internships and gap-year placements (L1 to M1), MIDO Department.
- 2016–2023 **Elected member** of the CFVE at Université Paris-Dauphine. Re-elected in 2020.
Council for Education and Student Life.
- 2016–2023 **Elected member** of the CCR of CEREMADE.
Seven-member committee (one senior and one junior faculty member from each of the three teams, plus the Lab Director as an ex officio member) deciding on the composition of hiring committees, the ranking of ATER positions, and the allocation of invited-professor months at CEREMADE.
- 2014–2021 Member of the **Opération Postes** team.
Monitoring and disseminating information on academic hiring in mathematics, computer science and mechanics.
- 2011–2013 **Co-management** (with Benjamin Aymard) of office allocation for PhD students at the Jacques-Louis Lions Laboratory and of the PhD-student database on the LJLL website.

Organization of seminars, conferences, sessions

- Apr. 2026 **Co-organization** (with Mamadou Gueye) of a CIMPA research school at Université de Ziguinchor (Senegal). Title: "control and shape optimization".
CIMPA supports advanced schools in mathematics in developing countries.
- Mar. 2026 Member of the organizing committee of the "Congrès des Jeunes Chercheurs et Chercheuses en Mathématiques Appliquées", Marne-La-Vallée, France.
- Jun. 2025 **Co-organization** (with Franck Boyer) of a **2h** minisymposium at the SMAI Congress on ODE and PDE control, Carcans, France.
- Aug. 2022 **Organization** (by invitation) of **one 2h session** on PDE controllability at the conference "Partial differential equations, optimal design and numerics", Benasque, Spain.

- Jun. 2022 **Co-organization** (with Laetitia Giraldi) of a **1h30** minisymposium at CANUM on control and optimal control in fluid mechanics, Évian, France.
- Aug. 2019 **Co-organization** (with Morgan Morancey and Armand Koenig), by invitation, of **three 2h sessions** on PDE controllability (numerics, open problems, general interest) at the conference “Partial differential equations, optimal design and numerics”, Benasque, Spain.
- Aug. 2018 **Co-organization** (with Ionel Roventa), by invitation of the Scientific Committee, of **two 3h sessions** on PDE control at the “Congrès Franco-Roumain de Mathématiques Appliquées”, Bordeaux, France.
- Jul. 2018 **Co-organization** (with Ludovick Gagnon and Armand Koenig) of the conference “Young Researchers in Control Theory”, Les Salles-sur-Verdon, France.
- 2015–2017 **Co-organization** (with Julien Poisat) of the CEREMADE “Analysis–Probability” seminar.
- Aug. 2017 **Co-organization** (with Morgan Morancey), by invitation, of a **2h session** on controllability of parabolic equations at the conference “Partial differential equations, optimal design and numerics”, Benasque, Spain.
- Jun. 2016 **Organization** (by invitation of the Scientific Committee) of a **2h minisymposium** on PDE control at the conference “Inverse Problems, Control and Shape Optimization”, Autrans, France.
- Aug. 2015 **Co-organization** (with Morgan Morancey), by invitation, of **three 2h “young researchers” sessions** at the conference “Partial differential equations, optimal design and numerics”, Benasque, Spain.

Invitations abroad, research leaves and delegations

- 2026 **Invitation** for two weeks at the **Beijing Institute of Technology**, Beijing, China.
- 2025 **Invitation** for one week at the University of **Konstanz** (Germany).
- 2024 **Invitation** for one week at the University of **Craiova** (Romania).
- 2022 **CRCT** research leave, Université Paris-Dauphine.
Competitive national semester of reduced teaching duties for research.
- 2019 **Invitation** for one week at the University of **Craiova** (Romania).
- 2019 **Invitation** for one week at the Federal University of **Paraíba** (João Pessoa, Brazil).
- 2018 **Invitation** for one month at **Fudan University** (Shanghai).
- 2018 **INRIA delegation** at INRIA Sophia-Antipolis, McTao team (head: Jean-Baptiste Pomet).
Competitive six-month research delegation to INRIA.
- 2015 Invitation for two weeks at **Universidad Técnica Federico Santa María** (Santiago, Chile).

Refereeing and expert activities

- 2025– **Associate Editor** for “Numerical Algebra, Control and Optimization” (AIMS).
- 2024 Referee for a FONDECYT project (Chile).
- 2021 Referee for an ANR project.
- 2025– Reviewer of **one** PhD thesis: V. Laheurte (2025, University of Bordeaux; advisors: Roberta Bianchini and Franck Sueur).
- 2015– **1** participation in an HDR committee: T. Liard (2026).
- 2015– **9** participations in PhD committees: M. Duprez (2015), T. Liard (2017), J. Kolumban (2018), A. Koenig (2019), L. Ouaili (2020), C. Moreau (2020), J. Niu (2021), L. Perrin (2024), V. Laheurte (2025).
- 2018– Member of **two** AGPR hiring committees (2018 ENS Paris-Saclay, 2021 ENS Rennes).
- 2016– Member of **three** hiring committees for Associate Professor positions (2 at Paris-Dauphine, 1 at UPMC).

2011– **Referee for about 90 papers for the following journals:**, *Acta Applicandae Mathematicae*, *Advances in Differential Equations*, *Analysis and PDE*, *Annales de l'Institut Fourier*, *Annals of Mathematical Sciences and Applications*, *Applied Mathematics and Optimization*, *Asymptotic Analysis*, *Boletín de la Sociedad Matemática Mexicana*, *Calcolo*, *Comptes Rendus Mathématiques de l'Académie des Sciences*, *DCDS-S*, *ESAIM: Control, Optimisation and Calculus of Variations*, *European Journal of Control*, *IEEE Transactions on Automatic Control*, *International Journal of Control*, *Journal of the American Mathematical Society*, *Journal of Computational Physics*, *Journal of Differential Equations*, *Journal of Dynamical and Control Systems*, *Journal of Evolution Equations*, *Journal of Fixed Point Theory and Applications*, *Journal of Mathematical Analysis and Applications*, *Journal de l'École Polytechnique*, *Journal de Mathématiques Pures et Appliquées*, *Journal of Optimization Theory and Applications*, *Mathematical Control and Related Fields*, *Mathematical Methods in the Applied Sciences*, *Mathematische Nachrichten*, *Nonlinear Analysis*, *Numerische Mathematik*, *Revista Matemática Iberoamericana*, *SeMA Journal*, *SIAM Journal of Control and Optimization*, *SIAM Journal on Mathematical Analysis*, *Systems and Control Letters*, *Vietnam Journal of Mathematics*.

Awards and distinctions

- 2023 Selected as a **Junior Member of the IUF** (Institut Universitaire de France).
Highly selective national research distinction in France, awarded each year to about 100 faculty members across all disciplines nationwide for outstanding research achievements. Resigned after accepting the Junior Professor chair at École nationale des ponts et chaussées.
- 2016, 2020 Awarded the **PEDR** ("Prime d'Encadrement Doctoral et de Recherche").
Competitive national research bonus based on research achievements and doctoral supervision; top 20% in all evaluation criteria (CNU scores: A P., A E., A D., A R., overall A).

Funding

- 2026– **Scientific coordinator (PI)** of the ANR PRC **SCOPE** (*Singularities and geometric COntrol in Partial differential Equations*) (438,000 euros).
- 2026– **Co-PI**, with Swann Marx and Sébastien Impériale, of the **Frontiers IOSTAB** project (*Input-Output Structures for Stabilizing Complex PDE Systems*) (150,000 euros).
The Institut Polytechnique de Paris Frontiers program supports exploratory high-risk/high-gain research projects: scientific risk is a central criterion, with the aim of fostering ambitious ideas that may open new paradigms rather than merely extending already mature projects.
- 2023–2026 **Junior Professor Chair (PI)** (200,000 euros).
The 200,000-euro amount is a research package attached to the chair, intended to fund the holder's research activities.
- 2016, 2018 Awarded a **PEPS Jeunes Chercheur-e-s** project (INSMI) (2×3000 euros).
Programme exploratoire de premier soutien: an INSMI-CNRS exploratory first-support scheme for early-career researchers, intended in particular to initiate collaborations and larger projects that may subsequently lead to applications to funding agencies.
- 2019–2022 Member of the MATH-AmSud Brazil–France–Chile project. PI: Takéo Takahashi ($\sim 25,000$ euros).
MATH AmSud is a scientific and technological cooperation program between France and several South American countries, aimed at strengthening collaborations and research networks in mathematics through joint projects.
- 2020–2024 Member of the ANR TRECOS project. PI: Sylvain Ervedoza ($\sim 300,000$ euros).
- 2016–2020 Member of the ANR IFSMACS project. PI: Takéo Takahashi ($\sim 350,000$ euros).

Miscellaneous

- 2021 Examiner for the ENS oral exam (MP stream; joint exam).
- 2019–2021, 2023 Grader for the written exam (MP stream) of the joint X–ENS competitive exam (paper C).
- 2015, 2021 FSMP mentor for international students (Nicolas Molina and Méricel Ayamou).
Fondation Sciences Mathématiques de Paris program for international Master's students in mathematics.
- 2017–2019 **Oral examinations in preparatory classes, ECS1**, Lycée Carnot
- 2018 Coordinator of the working group on the redesign of Analysis teaching in the Mathematics BSc/MSc programs at Université Paris-Dauphine.
- 2017, 2019– Member of 7 external admission committees (L2, L3, M1), MIDO track.
- 2015 Member of the Bolero committee (admission to L1 at Dauphine, MIDO track).
- 2010–2012 **Oral examinations in preparatory classes, MPSI 3**, Lycée Saint-Louis
- French Native language.
- English Fluent.
- Computing Basic knowledge of Python, Maple, C++, Mathematica, Matlab.

Talks at international conferences

46 talks over the period 2012–2026

- Aug. 2026 **Optimal cost of fast boundary controls for the one-dimensional heat equation**, *XI Partial Differential Equations, Optimization, Numerics, and Machine Learning, Benasque, Spain*, plenary talk, 40 mins
- Jul. 2026 **Robust control of linear systems under small parameter variation**, *AIMS Conference, Athens, Greece*, invited talk, 25 mins
- Jul. 2026 **Exact output tracking of the 1-d heat equation**, *AIMS Conference, Athens, Greece*, invited talk, 25 mins
- May 2026 **Exact output tracking of the 1-d heat equation**, *Conference, Gaeta, Italy*, invited talk, 25 mins
- Nov. 2025 **Exact output tracking of the 1-d heat equation**, *PICOF, Hammamet, Tunisia*, invited talk, 30 mins
- Oct. 2025 **Exact output tracking for the 1-d heat equation**, *Conference for the 130th anniversary of Gazeta Matematica, Politehnica University of Bucharest, Romania*, plenary talk, 30 mins
- Sep. 2025 **A new result on the cost of fast controls for the 1D Schrödinger equation**, *Control of Partial Differential Equations in Hauts-de-France, Université du Littoral, Calais*, plenary talk, 45 mins
- Jun. 2025 **Null controllability of the 1D heat equation with interior inverse square potential**, *Conference in honor of Luz de Teresa's 60th birthday, Mexico City, Mexico*, plenary talk, 60 mins
- Dec. 2024 **Null controllability of underactuated linear parabolic-transport system**, *AIMS Conference, Abu Dhabi*, invited talk, 25 mins
- Sep. 2024 **Luenberger observers for the Linearized water wave equation**, *Franco-Romanian Congress of Applied Mathematics, Bucharest, Romania*, invited talk, 30 mins
- Aug. 2024 **Luenberger observers for the Linearized water wave equation**, *Partial differential equations, optimal design and numerics, Benasque, Spain*, plenary talk, 45 mins
- May 2024 **An internal controllability result for a class of coupled wave systems**, *International Conference on Elliptic and Parabolic Problems, Gaeta, Italy*, invited talk, 25 mins
- Aug. 2023 **Null controllability of underactuated linear parabolic-transport system**, *ICIAM, Tokyo, Japan*, invited talk, 20 mins

- Dec. 2022 **Desensitizing controls for the heat equations with respect to boundary variations**, *Workshop "Recent advances in direct and inverse problems for PDEs and applications"*, Rome, Italy, invited talk, 30 mins
- Dec. 2022 **Desensitizing controls for the heat equations with respect to boundary variations**, *Canadian Mathematical Society Winter Meeting*, Toronto, Canada, invited talk, 20 mins
- Sep. 2021 **A non-controllability result for the half-heat equation on the whole line based on the prolate spheroidal wave functions and its application to the Grushin equation**, *Analysis, control, and numerics for PDE models of interest to physical and life sciences*, Levico, Italy, invited talk, 30 mins
- Jul. 2021 **A non-controllability result for the half-heat equation on the whole line based on the prolate spheroidal wave functions and its application to the Grushin equation**, *Workshop on Analysis and Control Theory*, Bordeaux, plenary talk, 40 mins
- Nov. 2019 **Controllability properties of a magnetic microswimmer**, *60 years of academic education of science at the University of Craiova, Romania*, plenary talk, 20 mins
- Sep. 2019 **Bilinear local controllability to the trajectories of a Fokker–Planck equation with a localized control**, *DEA Conference*, Krakow, Poland, invited talk, 25 mins
- Aug. 2019 **Controllability properties of a magnetic microswimmer**, *Partial differential equations, optimal design and numerics*, Benasque, Spain, plenary talk, 45 mins
- Jul. 2019 **Bilinear local controllability to the trajectories of a Fokker–Planck equation with a localized control**, *"1st Joint Meeting Brazil–France in Mathematics"*, invited talk, 40 mins
- Jul. 2019 **Singular Optimal Control of a 1-D Parabolic-Hyperbolic Degenerate Equation**, *Equadiff*, Leiden, The Netherlands, invited talk, 30 mins
- May 2019 **Bilinear local controllability to the trajectories of a Fokker–Planck equation with a localized control**, *International Conference on Elliptic and Parabolic Problems*, Gaeta, Italy, invited talk, 25 mins
- Nov. 2018 **Approximation of internal controls for a fractional wave equation using finite-difference method**, *Conference "Analysis, Control and Inverse Problems for PDEs" (LIA COPDESC)*, invited talk, 25 mins
- Oct. 2018 **On the Lebeau–Robbiano strategy for the controllability of parabolic equations**, *Workshop "ERC SINGWAVE"*, Rome, Italy, plenary talk
- Sep. 2018 **Approximation of some control problems by finite-difference method**, *Conference*, Foz do Arelho, Portugal, invited talk
- Jul. 2018 **Insensitizing control for linear and semi-linear heat equations with partially unknown domain**, *AIMS Conference on Dynamical Systems*, Taipei, Taiwan, invited talk, 30 mins
- Jul. 2018 **Controllability of non-diagonalizable systems of heat equations**, *LIASFMA Workshop*, Shanghai, China, plenary talk, 40 mins
- Jun. 2018 **Controllability of coupled parabolic systems**, *PICOF*, Beirut, Lebanon, plenary talk, 45 mins
- Jun. 2018 **Approximation of internal controls for a fractional wave equation using finite-difference method**, *PICOF*, Beirut, Lebanon, invited talk, 45 mins
- Feb. 2018 **Two results on the controllability of coupled parabolic systems**, *MINAKE*, Madrid, plenary talk, 45 mins
- Nov. 2017 **On the cost of fast controls for linear dispersive equations**, *ICAMI*, San Andres, Colombia, invited talk, 25 mins
- Aug. 2017 **On non-diagonalizable systems of heat equations**, *Partial differential equations, optimal design and numerics*, Benasque, Spain, invited talk, 25 mins
- Feb. 2017 **Indirect internal controllability of parabolic equations coupled by zero and first order terms**, *Recife Workshop on Control and Stabilization*, plenary talk, 45 mins

- Aug. 2016 **On the cost of fast controls for the heat equation**, *Franco-Romanian Colloquium on Applied Mathematics, Iasi, Romania*, invited talk, 30 mins
- Jul. 2016 **A Kalman rank condition for the indirect controllability of coupled systems of linear operator groups**, *PDEs: Control, Numerics and Stochastics, Chengdu, China*, plenary talk, 1h
- Dec. 2015 **Fictitious control method and algebraic solvability**, *Infinite Dimensional Systems, Pointe-à-Pitre, France*, plenary talk, 1h
- Jul. 2015 **Uniform controllability of the one-dimensional transport-diffusion equation**, *SIAM Conference on Control and Its Applications, Paris*, invited talk, 30 mins
- Apr. 2015 **Uniform controllability of the one-dimensional transport-diffusion equation and cost of fast controls for the heat equation**, *Workshop on Control of Partial Differential Equations, L'Aquila, Italy*, plenary talk, 45 mins
- Mar. 2015 **Uniform controllability of the one-dimensional transport-diffusion equation and cost of fast controls for the heat equation**, *Workshop on Control and Inverse Problems, Besançon*, plenary talk, 1h
- Jan. 2015 **Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components**, *Workshop on Control Systems and Identification Problems, Valparaíso (Chile)*, invited talk, 30 mins
- Nov. 2014 **Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components**, *Workshop on Mathematical Fluid Dynamics and Fluid–Structure Interactions, Nancy*, plenary talk, 1h
- Jun. 2014 **On the uniform controllability of a transport-diffusion equation**, *Workshop “New trends in modeling, control and inverse problems”, Toulouse*, plenary talk, 1h
- Apr. 2014 **Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components**, *Control of PDEs, CNAM, Paris*, invited talk, 30 mins
- Aug. 2013 **Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components**, *Partial differential equations, optimal design and numerics, Benasque*, plenary talk, 45 mins
- Nov. 2012 **Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components**, *Contrôle des EDP, interactions et enjeux applicatifs, CIRM*, invited talk, 30 mins

Talks at national conferences, seminars, thematic days

60 talks over the period 2012–2026

- Jun. 2026 **Control of mixed transport-parabolic systems**, *Thematic day on control, Peking University, Beijing, China*, 45 mins
- Jun. 2026 **Control and stabilization of cascade coupled systems: application to a 1-D heat and wave coupled system**, *Seminar, Beijing Institute of Technology, Beijing, China*, 1h
- Apr. 2026 **Bilinear local controllability to the trajectories of a Fokker–Planck equation with a localized control**, *Nonlinear PDE seminar talk (online), Texas A&M University*, 1h
- Nov. 2025 **Exact output tracking of the 1-d heat equation**, *OS Numerical Optimization, Universität Konstanz, Mathematik und Statistik*, 1h
- Jun. 2025 **Luenberger observers for the linearized water-wave equation**, *Analysis seminar, CMAP, École Polytechnique*, 1h
- Jun. 2025 **A new result on the cost of fast controls for the 1D Schrödinger equation**, *Control Days, Université de Reims*, 1h
- Mar. 2025 **Controllability of a heat equation with an interior singular potential**, *Laboratory seminar, Compiègne, Talk*, 1h

- Jan. 2025 **Insensitizing controls and robustness of the controls**, *Jacques-Louis Lions Laboratory Seminar, Sorbonne Université*, 1h
- Oct. 2024 **Luenberger observers for the linearized water-wave equation**, *MOD team seminar, XLIM, Université de Limoges*, 1h
- Oct. 2024 **Null controllability of underactuated linear parabolic-transport system**, *PM-EDP team seminar, Université Paris-13*, 1h
- Sep. 2024 **Desensitizing controls for the heat equations with respect to boundary variations**, *Numerical analysis, control and optimization for physics, Sophia-Antipolis*, 1h
- Sep. 2024 **Luenberger observers for the linearized water-wave equation**, *Laboratory seminar, Craiova, Romania*, 1h
- Apr. 2024 **An internal controllability result for a class of coupled wave systems**, *ANR TRECOS Days*, 1h
- Feb. 2024 **Desensitizing controls for the heat equations with respect to boundary variations**, *Laboratory seminar, Université de Ziguinchor, Senegal*, 1h
- Oct. 2023 **Null controllability of underactuated linear parabolic-transport system**, *ANR Cosy workshop, Toulouse*, 1h
- Jun. 2023 **Desensitizing controls for the heat equations with respect to boundary variations**, *MOD Days, Limoges*, 1h
- May 2023 **Desensitizing controls for the heat equations with respect to boundary variations**, *Mokameeting, INRIA Paris*, 1h
- May 2023 **Approximation of some control problems by finite-difference method**, *Numerical analysis seminar, Rennes*, 1h
- Feb. 2023 **An internal controllability result for a class of coupled wave systems**, *Analysis seminar, Nantes*, 1h
- Jan. 2023 **Desensitizing controls for the heat equations with respect to boundary variations**, *Analysis seminar, Tours*, 1h
- Sep. 2022 **A non-controllability result for the half-heat equation on the whole line based on the prolate spheroidal wave functions and its application to the Grushin equation**, *SEMINÁRIO DE EDP E MATEMÁTICA APLICADA, online*, 1h
- Jun. 2022 **A non-controllability result for the half-heat equation on the real line. Application to the Grushin equation**, *ANR TRECOS workshop, Marseille*, 1h
- Apr. 2022 **A non-controllability result for the half-heat equation on the real line. Application to the Grushin equation**, *PDE seminar, LMV, Université Versailles Saint-Quentin*, 1h
- Nov. 2021 **Insensitizing controls for the heat equations with respect to boundary variations**, *Control in times of Crisis seminar, online*, 1h
- Jun. 2021 **An internal controllability result for a class of coupled wave systems**, *SMAI Congress, La Grande Motte*, 20 mins
- Apr. 2021 **Local controllability of a Fokker–Planck equation**, *ANEDP team seminar, Université Côte d’Azur*, 1h
- Mar. 2021 **A non-controllability result for the half-heat equation on the whole line based on the prolate spheroidal wave functions and its application to the Grushin equation**, *CAA Seminar, FAU Erlangen–Nürnberg, Germany*, 1h
- Mar. 2021 **Controllability of coupled linear parabolic systems with state positivity constraints**, *ANR TRECOS Working Group*, 1h
- Nov. 2020 **A non-controllability result for the half-heat equation on the real line. Application to the Grushin equation**, *MCS seminar, Université Sorbonne Paris Nord*, 1h

- Nov. 2019 **A non-controllability result for the half-heat equation on the real line. Application to the Grushin equation**, *Analysis seminar, Tours*, 1h
- Jul. 2019 **On the Lebeau–Robbiano strategy for the controllability of parabolic equations**, *Department of Mathematics, João Pessoa, Brazil*, 1h
- Mar. 2019 **Insensitizing control for the heat equations with partially unknown domain**, *Shape optimization working group, IMT Toulouse*, 1h
- Jan. 2019 **Controllability properties of a magnetic microswimmer**, *ANR IFSMACS Day, Nancy*, 40 mins
- Oct. 2018 **Approximation of some control problems by finite-difference method**, *Working group “Applications des Mathématiques”, ENS Rennes*, 1h
- Jun. 2018 **Insensitizing control for linear and semi-linear heat equations with partially unknown domain**, *CANUM, Cap d’Agde, France*, invited talk, 30 mins
- Mar. 2018 **On the Lebeau–Robbiano strategy for the controllability of parabolic equations**, *Fudan University seminar, Shanghai, China*, Talk, 1h
- Mar. 2018 **Indirect internal controllability of parabolic equations coupled by zero and first order terms**, *Fudan University seminar, Shanghai, China*, Talk, 1h
- Oct. 2017 **Approximation of Boundary Controls for the One-Dimensional wave equation**, *Laboratory seminar, Compiègne*, Talk, 1h
- Sep. 2017 **Internal observability for coupled systems of linear partial differential equations**, *Control Days, Inverse problems and Applications, Clermont-Ferrand*, Talk, 1h
- Mar. 2017 **Controllability of a bent 3-link magnetic microswimmer**, *Plateau de Saclay Automatic Control Seminar, iCODE, CentraleSupélec, Gif-sur-Yvette*, Talk, 1h
- Dec. 2016 **Control cost in the presence of a minimal control time: a simple example**, *APACHE Scientific Days, Toulouse*, Talk, 1h15
- Nov. 2016 **On the cost of fast controls and the moment method**, *PDE–Analysis seminar, Lyon*, Talk, 1h
- Nov. 2016 **Moment method, cost of fast controls for parabolic equations and Gevrey functions with compact support**, *Control Working Group, UPMC, Paris*, Talk, 1h
- Feb. 2016 **On the cost of fast controls and the moment method**, *PDE seminar, MOISE/MGMI, Grenoble*, Talk, 1h
- Jan. 2016 **Fictitious control method and algebraic solvability**, *Analysis and Geometry seminar, University of Nice*, Talk, 1h
- Oct. 2015 **Fictitious control method and algebraic solvability**, *Applied Analysis seminar, Aix-Marseille University*, Talk, 1h
- Feb. 2015 **Controllability of the Navier–Stokes equation in dimension 3 with a scalar control**, *Analysis–Probability seminar, Université Paris-Dauphine*, Talk, 1h
- Dec. 2014 **Non-localization of eigenfunctions for some Sturm–Liouville operators**, *Control and Optimization Day, University of Marseille*, plenary talk, 1h
- Nov. 2014 **Boundary control cost for some one-dimensional parabolic or dispersive equations**, *PDE seminar, Université de Franche-Comté*, Talk, 1h
- Apr. 2014 **Local null controllability of the three-dimensional Navier–Stokes system with a distributed control having two vanishing components**, *Journées Jeunes EDPistes Français, Fréjus*, invited talk, 1h
- Feb. 2014 **Local null controllability of the three-dimensional Navier–Stokes equation with a scalar control**, *Numerical analysis seminar, Université de Rennes*, Talk, 1h
- Feb. 2014 **Boundary control cost for some one-dimensional parabolic or dispersive equations**, *Young Control Researchers Day, Jacques-Louis Lions Laboratory*, invited talk, 1h

- Feb. 2014 **Local null controllability of the three-dimensional Navier–Stokes equation with a scalar control**, *Analysis seminar, Université de Tours*, Talk, 1h
- Jan. 2014 **Local null controllability of the three-dimensional Navier–Stokes equation with a scalar control**, *PDE seminar, University of Metz (Université de Lorraine)*, Talk, 1h
- Jan. 2014 **Local null controllability of the three-dimensional Navier–Stokes equation with a scalar control**, *University of Toulouse*, Talk, 1h
- Jun. 2013 **Uniform controllability of a transport-diffusion equation**, *PhD Students Working Group, Institut Mathématique de Jussieu*, Talk, 45 mins
- Feb. 2013 **Controllability of linear or nonlinear PDEs: reducing the number of controls; small-time control cost; uniform controllability in the vanishing-viscosity limit**, *Morning presentation of the control theme at LJLL*, Talk, 15 mins
- Jan. 2013 **Uniform controllability for a 1D transport-diffusion equation and cost of fast controls for the 1D heat equation**, *PhD Students Working Group, Jacques-Louis Lions Laboratory*, Talk, 50 mins
- Nov. 2012 **On a conjecture of Coron and Guerrero**, *Young control researchers afternoon, Jacques-Louis Lions Laboratory*, invited talk, 30 mins
- Apr. 2012 **Controllability of the Navier–Stokes equation in dimension 3 with a scalar control**, *PhD Students Working Group, Jacques-Louis Lions Laboratory*, Talk, 50 mins