

# Pierre Lissy

Assistant Professor in  
Mathematics

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

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## Current Situation

Sept. 2014- **Assistant Professor**, Université Paris-Dauphine.

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## Formation

- 2010-2014 **PhD under the supervision of Jean-Michel Coron**, *On the controllability and its cost for some*, Defended 13/12/13 at Université Pierre et Marie Curie (Paris).
- 2009-2010 **Preparation to French Competitive Examination for Teaching "Agrégation"**, Rank : 22/270, ENS de Cachan.
- 2009 **Admission to ENS Cachan**, Rank : 7.
- 2008-2009 **Master 2 PDEs**, "*Pretty good*" awarded, Université Paris-XI.
- 2007-2008 **License 3, Master 1**, "*Good*" awarded, Common training ENS-Cachan Paris-7.
- 2007 **Admission to ENS Cachan**.
- 2004-2007 **French "Classes préparatoires" MPSI, MP\***, *Lycée Descartes de Tours*, Main courses : mathematics, physics, Elite class.

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## Publications and prepublications

- [18] Insensitizing control for linear and semi-linear heat equations with partially unknown domain (with Yannick Privat et Yacouba Simporé), submitted.
- [17] Internal controllability for parabolic systems involving analytic non-local terms (with Enrique Zuazua), accepted for publication at **Chinese Annals of Mathematics** (special issue in honor of Philippe Ciarlet).
- [16] Addendum to "Local Controllability of the Two-Link Magneto-Elastic Micro-Swimmer, (with Laetitia Giraldi, Clément Moreau and Jean-Baptiste Pomet), accepted up to minor revision at **IEEE :TAC**.
- [15] Internal observability for coupled systems of linear partial differential equations (with Enrique Zuazua), submitted.
- [14] Controllability of a bent 3-link magnetic microswimmer (with Laetitia Giraldi, Clément Moreau et Jean-Baptiste Pomet), prepublication.
- [13] Positive and negative results on the internal controllability of parabolic equations coupled by zero and first order terms (with Michel Duprez), accepted for publication at **Journal of Evolution Equations**.
- [12] Optimal Filtration for the approximation of boundary controls for the one-dimensional wave equation (with Ionel Roventa), under minor revision.
- [11] Non-localization of eigenfunctions for Sturm-Liouville operators (with Thibault Liard et Yannick Privat), accepted for publication at **Journal of Differential Equations**.
- [10] A Kalman rank condition for the indirect controllability of coupled systems of linear operator groups (with Thibault Liard), **Math. Control Signals Syst.** (2017) 29 :9.

- [9] The cost of the control in the case of a minimal time of control : the example of the one-dimensional heat equation, **J. Math. Anal. Appl.**, Volume 451, Issue 1, 1 July 2017, Pages 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**, Volume 7, Issue 1, March 2017, pp. 21-40.
- [7] Singular Optimal Control of a 1-D Parabolic-Hyperbolic Degenerate Equation, (with Mamadou Gueye), **ESAIM : COCV** Volume 22, Number 4, October-December 2016 Special Issue in honor of Jean-Michel Coron for his 60th birthday, 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), pp. 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**, Volume 259, Issue 10 (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 J. Control Optim.**, 52(4), 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**, Volume 198, Issue 3, pp 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. **C. R. Math. Acad. Sci. Paris** 350 (2012), no. 11-12, 591-595.

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## Teaching

- 2017- **Course, tutorial classes in Master 1 MMD-MA**, *Functional Analysis and PDEs*, Université Paris-Dauphine.
- 2014-2017 **Course, tutorial classes, practical work in Master 1 MMD-MA**, *Numerical methods for evolution equations*, Université Paris-Dauphine.
- 2014-2017 **Tutorial classes License 2 MIDO**, *Analysis, Probability*, Université Paris-Dauphine.
- 2011-2014 **Tutorial classes at Polytech'UPMC in ST3, ELI3, EI-SE3, ROB3**, *Linear algebra, Hilbert analysis, distributions and Fourier transform, probability*.
- 2010-2011 **Course-tutorial classes in DEGEAD1** , *Real analysis in one or two variables, optimization with or without constraints*, Université Paris-Dauphine.

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## Doctoral and Pre-doctoral direction

- 2017- **Co-direction** (with Laetitia Giraldi and Jean-Baptiste Pomet) of the **PhD** thesis of **Clément Moreau**
- Fév. 2016-Août 2016 **Co-direction** (with Laetitia Giraldi and Jean-Baptiste Pomet) du **Master** thesis of Clément Moreau.
- 2013-2016 **Important participation** (no implication in the direction, but an important part in the common work and the scientific mentoring) of l'**encadrement** de **Thibault Liard**. PhD advisors : Alain Haraux et Yannick Privat.

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## Administrative and scientific duties

- 2017- **In charge of validation of internships and interim years** at License 3 and Master 1, Département Mido
- 2016- **Elected member of "CFVE"** (Council of initial training and student life) of Université Paris-Dauphine.
- 2016- **Elected member of the "CCR"** of CEREMADE [Commission organizing the hiring process]
- 2015- **Co-organisation** (with Julien Poisat) of **Analysis-Probability seminar** at CEREMADE.
- Août 2017 **Co-organisation** (with Morgan Morancey) at the invitation of the organizers of a **2h session** on the controllability of parabolic equations and systems at the conference "Partial differential equations, optimal design and numerics", Benasque, Spain
- Juin 2016 **Organisation** at the invitation of the Scientific committee of a **2h mini-symposium** at the conference "Problèmes Inverses, Contrôle et Optimisation de Forme", Autrans, France
- Août 2015 **Co-organisation** (with Morgan Morancey) at the invitation of the organizers of **3 "young researchers" sessions** of 2 hours at the conference "Partial differential equations, optimal design and numerics", Benasque, Spain

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## Invitations, Research leaves

- 2018 **INRIA Research Leave** for 6 months at l'INRIA Sophia-Antipolis in the team McTao (director : Jean-Baptiste Pomet)
- 2015 2 weeks invitation at University **Santa-Maria** (Santiago de Chile)

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## Expertise

- 2011- **Reviewer of 32 articles in the following journals :** *Advances in Differential Equations, Asymptotic Analysis, 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 Differential Equations, Journal of Dynamical and Control Systems, Journal of Fixed Point Theory and Applications, 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, Revista Matematica Iberoamerica, SeMA Journal, SIAM Journal of Control and Optimization, Systems and Control Letters, Vietnam Journal of Mathematics..*
- Nov. 2015 Participation of the exam board of the PhD defense of Michel Duprez (invited)
- Nov. 2016 Participation of the exam board of the PhD defense of Thibault Liard (examiner)

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## Miscellaneous

- 2016-2020 Attribution of the french **PEDR** (competitive bonus for researchers)
- 2016 Project **PEPS-Young-Researchers** from INSMI (CNRS) (3000 euros)
- Français Mother tongue
- Anglais fluent
- Computing Basis notions of Maple, C++, Mathematica, Advanced notions of Matlab
- 2012-2017 **15 invitations** to give a talk in international conferences
- 2012-2017 **24 invitations** to give a talk in national conferences, seminars, thematic days