

Dario Prandi

Charge de recherche CNRS at Université Paris-Saclay



✉ dario.prandi@centralesupelec.fr 🏠 www.darioprandi.com

📍 3, Rue Joliot-Curie, 91192 CentraleSupélec, Gif-sur-Yvette, France

Professional experience

- Chargé de Recherche CNRS**, Université Paris-Saclay, CentraleSupélec, L2S
Researcher in Section 07. 2016–now
- Post-doc**, CEREMADE, Université Paris-Dauphine, Paris
Supervisors: [G. Peyré](#) and [J.-M. Mirebeau](#). 2015–2016
- Post-doc**, LSIS, Université de Toulon, Toulon
Grant of the LabEx Archimede (Aix-Marseille Université). Supervisor: [J.-P. Gauthier](#). 2014–2015

Education

- Philosophiae Doctor (Ph.D.)**, École Polytechnique, Palaiseau
[Geometry and analysis of control-affine systems: motion planning, heat and Schrödinger evolution](#).
Supervisors: [Ugo Boscain](#), [Frédéric Jean](#), and [Mario Sigalotti](#). 2010–2013
- Master of Science (M.Sc.)**, Dep. of Mathematics, Univ. di Padova, Italy
Final grade 110/110 *cum laude*. Specialised curriculum in mathematical analysis.
Subject of the dissertation: Rearrangements in Metric Spaces. Supervisor: [Roberto Monti](#). 2008 – 2010
- Bachelor of Science (B.Sc.)**, Dep. of Mathematics, Univ. di Modena e Reggio Emilia, Italy
Final grade 110/110 *cum laude*. General curriculum in mathematics.
Subject of the dissertation: Area and coarea formulae. Supervisor: [Gian Paolo Leonardi](#). 2005 – 2008

Organization

- NFW 23: Neural fields equations, from Wilson-Cowan to neural engineering**, LJLL, Paris. 19-20 jun 2023
Website: <https://nfwparis2023.sciencesconf.org/registration>.
- Geometry and Control in Cortona**, Cortona, Italy 27-31 mar 2023
Website: <https://indico.math.cnrs.fr/event/7106/>.
- Séminaire d'Automatique du Plateau de Saclay**, L2S, CentraleSupélec, Gif-sur-Yvette. oct 2016 – now
Website: <https://icode-seminars.github.io>. Co-organised with N. Amini.
- Cortical models for visual perception and imaging applications**, LJLL, Paris. 22 nov 2018
Website: <https://liftme.sciencesconf.org/>. Co-organised with L. Calatroni, V. Franceschi, and B. Franceschiello.
- Cortical Inspired Non-holonomic Control for Imaging**, Institut Henri Poincaré, Paris. 28 nov 2017
Co-organised with L. Calatroni and V. Franceschi.
- A day in control theory**, CMAP, École Polytechnique, Palaiseau. 2 may 2017
Thematic day in honour of A. Agrachev 65th birthday. Co-organised with F. Chittaro and R. Ghezzi.
- INDAM meeting on Geometric Control and sub-Riemannian Geometry**, Cortona, Italy. may 2012
Website: <http://www.cmap.polytechnique.fr/geometric-control-srg/>.

Grants and awards

- Partenariat Hubert-Curien Pessoa**, “Bio-inspired sound processing” 2024–2025
Financing for 7k€. PI of the French side, in collaboration with R. Chertovskii (Univ. of Porto).
- 80 prime**, “A bio-inspired geometric model for speech sound reconstruction” 2023–2024
Financing for 20k€ and a Ph.D thesis. In collaboration with U. Boscain (Sorbonne U.) and G. Turco (Paris-Cité U.).
- ANR JCJC**, “Redundancy-free neuro-biological design of visual and auditory sensing” 2021–2024
Financing for 160k€. PI of the project.
- Dispositif de Soutien aux Collaborations avec l’Afrique Subsaharienne (DSCA)**, “Neural dynamics via mean-field models” 2021-2022
Financing for 17k€. PI of the project.

Emergence en Recherche de IDEX Université de Paris, "BioSpeech" Financing for 20k€. Principal investigator: Giuseppina Turco, in collaboration with U. Boscain	2019
Financing from iCODE institut, "Control theoretical modelling of contrast perception" Financing for 12k€. "Porteur" of the project, in collaboration with V. Franceschi and L. Calatroni	2019
PEPS INS2I, "Lifting approaches for cortical inspired methods in imaging (LiftME)" Financing for 10k€. "Porteur" of the project, in collaboration with V. Franceschi and L. Calatroni	2018
PEPS INS2I, "Cortical Inspired Non-holonomic Control for Imaging (CINCIN)" Financing for 8k€. "Porteur" of the project, in collaboration with J.-P. Gauthier, V. Franceschi, L. Calatroni.	2017
ERC Proof of Concept, "An artificial visual cortex for image processing (ARTIV1)" Financing for 150k€. Principal investigator: Ugo Boscain. In collaboration with J.-P. Gauthier and M. Sigalotti.	2016

Scientific and Administrative Responsibilities

Team leader of équipe COMEDY at L2S The "Control, Modelling, and Dynamics of complex systems" équipe is composed of 24 members.	2026 – now
Scientific secretary for the Section 7 of "Comité National de la Recherche Scientifique" The CNRS Section 7 (Section 3, since 2026) is in charge of the evaluation and recruitment of CNRS researchers in the field of automatic control, signal processing and related areas. See https://section3.cnrs.fr .	2021 – 2025

Teaching

Lecturer , Optimisation, Control, and Data (CM, 24h). Master course, Sorbonne Université.	2025 – now
Lecturer , Geometric Control Theory & Intro to PDE (CM, 50h). Master course, Institut de Mathématiques et de Sciences Physiques (Porto-Novo, Benin).	2021 – now
Lecturer , Geometric Control Theory (CM, 18h). Master course, Université Paris-Sud Orsay / ENSTA.	2018 – now
Lecturer , Analyse et Topologie / Calcul Différentiel / Méthodes Mathématiques (~80h/y). Bachelor level courses (L2/L3). PSL Research University, Paris.	2015 – now
Teaching assistant , Contrôle Géométrique (TD, 10h). Master course, Université Paris-Sud Orsay.	2013 & 2016
Teaching assistant , Outils Logiciels (TP, 50h). Bachelor course, IUT de Toulon.	2014

Supervision

- Post-doc supervisions:
 - Virginia Bolelli (2023-prés.). Subject: "Flicker-induced visual illusions".
 - Ilias Rentzeperis (2021-2022). Subject: "Sparse coding for V1 receptive fields".
- Ongoing PhD thesis supervision:
 - Xiangyu Ma (2023-prés.).
Thesis financed by the CNRS 80 prime interdisciplinary project.
Co-supervised with U. Boscain (Sorbonne Univ.) and G. Turco (Paris-Cité Univ.).
Title: "A bio-inspired geometric model for speech sound reconstruction".
 - Lucia Tessarolo (2023-prés.).
Co-supervised with U. Boscain (Sorbonne Univ.)
Title: "Analysis and geometry of surfaces in 3D contact sub-Riemannian manifolds".
 - Adel Annabi (2022-prés.).
Co-supervised with J.-B. Pomet and L. Sacchelli (Inria Sophia-Antipolis).
Title: "Observability and observer synthesis for Wilson-Cowan equations".
 - Martijn Kluitenberg (2021-prés.).

Co-supervised with M. Seri (Univ. of Groningen, NL) and R. Petrides (Paris-Cité Univ).
Title: "Magnetic car parks and superconductors".

- Completed PhD thesis supervision:
 - Roman Vanlaere (2022–prés.).
Co-supervised with P. Lissy (École des Ponts).
Title: "Controllability properties of the heat equation on sub-Riemannian manifolds".
 - Cyprien Tamekue (2020–2023). Thesis financed by the "Financement Jean-Pierre Aguilar".
Co-supervised with Y. Chitour (Univ. Paris-Saclay).
Title: "Controllability, visual illusions and perception"
 - Pierre-Jean Ménabé (2021–2024).
Co-supervised with Y. Chitour (Univ. Paris-Saclay).
Title: "Regularity of optimal trajectories for control-affine systems"
 - Amine Bohi (2014–2017).
Co-supervised with F. Bouchara, J.-P. Gauthier, V. Guis (Univ. de Toulon).
Title: "Descripteurs de Fourier inspirés de la structure du cortex visuel primaire humain. Application à la reconnaissance de navires dans le cadre de la surveillance maritime"
- Supervised 13 "stage de master" since 2018.
- Supervised a student in the "parcours recherche" of CentraleSupélec (2017–2020)

Publications

Preprints

- [1] Unweighted Hardy Inequalities on the Heisenberg Group and in Step-Two Carnot Groups
Lorenzo Arca, Luca Fanelli, Valentina Franceschi, Dario Prandi
arXiv: [2603.04086](#) [math]
- [2] Spectral properties of magnetic fields on sub-Riemannian contact manifolds
Riccardo Bonalli, Dario Prandi
arXiv: [2512.23281](#) [math.DG]
- [3] Asymptotics of motion planning complexity for control-affine systems
Michele Motta, Dario Prandi
arXiv: [2511.17130](#) [math.DS]
- [4] A solution to the mystery of the sub-harmonic series and to the combination tone via a linear mathematical model of the cochlea
Ugo Boscain, Xiangyu Ma, Dario Prandi, Giuseppina Turco
arXiv: [2509.26395](#) [eess.SP]
- [5] Generalized Fourier-Bessel operator and almost-periodic interpolation and approximation
J.-P. Gauthier, D. Prandi
arXiv: [1612.00056](#) [math.NA]

Books and edited proceedings

- [1] A semidiscrete version of the Petitot model as a plausible model for anthropomorphic image reconstruction and pattern recognition
Dario Prandi, Jean-Paul Gauthier,
SpringerBriefs in Mathematics (2018), Springer International Publishing, doi: [10.1007/978-3-319-78482-3](#)

Peer-reviewed journals

- [1] Schrödinger Evolution on Surfaces in 3D Contact Sub-Riemannian Manifolds
Riccardo Adami, Ugo Boscain, Dario Prandi, Lucia Tessarolo
Journal of Differential Equations 453 (Feb. 2026), p. 113915, doi: [10.1016/j.jde.2025.113915](#)
- [2] A Neural Model for V1 That Incorporates Dendritic Nonlinearities and Back-Propagating Action Potentials
Ilias Rentzeperis, Dario Prandi, Marcelo Bertalmío
The Journal of Neuroscience (18th Sept. 2025), e1975242025, doi: [10.1523/JNEUROSCI.1975-24.2025](#)
- [3] Neural field equations with time-periodic external inputs and some applications to visual processing
Maria Virginia Bolelli, Dario Prandi

J. Math. Imaging Vision (to appear), arXiv: [2407.17294](https://arxiv.org/abs/2407.17294) [q-bio.NC]

- [4] Activity Estimation via Distributed Measurements in an Orientation Sensitive Neural Fields Model of the Visual Cortex
Adel Malik Annabi, Jean-Baptiste Pomet, Dario Prandi, Ludovic Sacchelli
Mathematics of Control, Signals, and Systems (2025), doi: [10.1007/s00498-025-00416-w](https://doi.org/10.1007/s00498-025-00416-w)
- [5] Reproducibility via neural fields of visual illusions induced by localized stimuli
Cyprien Tamekue, Dario Prandi, Yacine Chitour
Discrete and Continuous Dynamical Systems - B (2024), doi: [10.3934/dcdsb.2024135](https://doi.org/10.3934/dcdsb.2024135)
- [6] A Mathematical Model of the Visual MacKay Effect
Cyprien Tamekue, Dario Prandi, Yacine Chitour
SIAM Journal on Applied Dynamical Systems 23.3 (2024), pp. 2138–2178, doi: [10.1137/23M1616686](https://doi.org/10.1137/23M1616686)
- [7] Weyl's law for singular Riemannian manifolds
Yacine Chitour, Dario Prandi, Luca Rizzi
Journal de Mathématiques Pures et Appliquées (2024), doi: <https://doi.org/10.1016/j.matpur.2023.10.004>
- [8] Beyond ℓ_1 sparse coding in V1
Ilias Rentzeperis, Luca Calatroni, Laurent U. Perrinet, Dario Prandi
PLOS Computational Biology (2023), doi: [10.1371/journal.pcbi.1011459](https://doi.org/10.1371/journal.pcbi.1011459)
- [9] Horizontal magnetic fields and improved Hardy inequalities in the Heisenberg group
Biagio Cassano, Valentina Franceschi, David Krejčířík, Dario Prandi
Communications in Partial Differential Equations (2023), doi: [10.1080/03605302.2023.2191326](https://doi.org/10.1080/03605302.2023.2191326)
- [10] Worst Exponential Decay Rate for Degenerate Gradient Flows Subject to Persistent Excitation
Paolo Mason, Yacine Chitour, Dario Prandi
SIAM Journal on Control and Optimization (2021), doi: [10.1137/20M1343427](https://doi.org/10.1137/20M1343427)
- [11] A Cortical-Inspired Sub-Riemannian Model for Poggendorff-Type Visual Illusions
Emre Baspinar, Luca Calatroni, Valentina Franceschi, Dario Prandi
Journal of Imaging 7.3 (2021), doi: [10.3390/jimaging7030041](https://doi.org/10.3390/jimaging7030041)
- [12] A bio-inspired geometric model for sound reconstruction
Ugo Boscain, Dario Prandi, Ludovic Sacchelli, Giuseppina Turco
The Journal of Mathematical Neurosciences (2021), doi: [10.1186/s13408-020-00099-4](https://doi.org/10.1186/s13408-020-00099-4)
- [13] Point interactions for 3D sub-Laplacians
Riccardo Adami, Ugo Boscain, Valentina Franceschi, Dario Prandi
Annales de l'Institut Henri Poincaré C, Analyse non linéaire (2020), doi: [10.1016/j.anihpc.2020.10.007](https://doi.org/10.1016/j.anihpc.2020.10.007)
- [14] Cortical-inspired Wilson-Cowan-type equations for orientation-dependent contrast perception modelling
Marcelo Bertalmío, Luca Calatroni, Valentina Franceschi, Benedetta Franceschiello, Dario Prandi
J. Math. Imaging Vision (2020), doi: [10.1007/s10851-020-00960-x](https://doi.org/10.1007/s10851-020-00960-x)
- [15] Visual illusions via neural dynamics: Wilson-Cowan-type models and the efficient representation principle
Marcelo Bertalmío, Luca Calatroni, Valentina Franceschi, Benedetta Franceschiello, Alexander Gomez-Villa, Dario Prandi
Journal of Neurophysiology (2020), doi: [10.1152/jn.00488.2019](https://doi.org/10.1152/jn.00488.2019)
- [16] Hardy-Type Inequalities for the Carnot–Carathéodory Distance in the Heisenberg Group
Valentina Franceschi, Dario Prandi
The Journal of Geometric Analysis (2020), doi: [10.1007/s12220-020-00360-y](https://doi.org/10.1007/s12220-020-00360-y)
- [17] On the regularity of abnormal minimizers for rank 2 sub-Riemannian structures
Davide Barilari, Yacine Chitour, Frédéric Jean, Dario Prandi, Mario Sigalotti
Journal de Mathématiques Pures et Appliquées (2020), doi: [10.1016/j.matpur.2019.04.008](https://doi.org/10.1016/j.matpur.2019.04.008)
- [18] A sub-Riemannian Santaló formula with applications to isoperimetric inequalities and first Dirichlet eigenvalue of hypoelliptic operators
Dario Prandi, Luca Rizzi, Marcello Seri
J. Differential Geom. (2019), Lehigh University, doi: [10.4310/jdg/1549422105](https://doi.org/10.4310/jdg/1549422105)
- [19] On the Essential Self-Adjointness of Singular Sub-Laplacians
Valentina Franceschi, Dario Prandi, Luca Rizzi
Potential Analysis (2019), doi: [10.1007/s11118-018-09760-w](https://doi.org/10.1007/s11118-018-09760-w)
- [20] Quantum confinement on non-complete Riemannian manifolds
Dario Prandi, Luca Rizzi, Marcello Seri
J. Spectr. Theory (2018), doi: [10.4171/JST/226](https://doi.org/10.4171/JST/226)

- [21] Highly Corrupted Image inpainting Through Hypoelliptic Diffusion
Ugo V. Boscain, Roman Chertovskih, Jean-Paul Gauthier, Dario Prandi, Alexey Remizov
J. Math. Imaging Vision (2018), doi: [10.1007/s10851-018-0810-4](https://doi.org/10.1007/s10851-018-0810-4)
- [22] Self-adjoint extensions and stochastic completeness of the Laplace-Beltrami operator on conic and anti-conic surfaces
Ugo Boscain, Dario Prandi
J. Differential Equations (2016), doi: [10.1016/j.jde.2015.10.011](https://doi.org/10.1016/j.jde.2015.10.011)
- [23] Spectral analysis and the Aharonov-Bohm effect on certain almost-Riemannian manifolds
U. Boscain, D. Prandi, M. Seri
Comm. Partial Differential Equations (2016), doi: [10.1080/03605302.2015.1095766](https://doi.org/10.1080/03605302.2015.1095766)
- [24] Fourier descriptors based on the structure of the human primary visual cortex with applications to object recognition
Amine Bohi, Dario Prandi, Vincente Guis, Frédéric Bouchara, Jean-Paul Gauthier
J. Math. Imaging Vision 57.1 (2017), pp. 117–133, doi: [10.1007/s10851-016-0669-1](https://doi.org/10.1007/s10851-016-0669-1)
- [25] Complexity of control-affine motion planning
F. Jean, D. Prandi
SIAM J. Control Optim. (2015), doi: [10.1137/130950793](https://doi.org/10.1137/130950793)
- [26] Hölder equivalence of the value function for control-affine systems
Dario Prandi
ESAIM: COCV (2014), doi: [10.1051/cocv/2014014](https://doi.org/10.1051/cocv/2014014)

Peer-reviewed conferences and workshops

- [1] Identification of saturated networked systems
Adel Malik Annabi, Ludovic Sacchelli, Jean-Baptiste Pomet, Dario Prandi
64rd IEEE Conference on Decision and Control, 2025, IEEE
- [2] Homogeneous observer for a low-dimensional neural fields model of cortical activity
Adel Malik Annabi, Ludovic Sacchelli, Jean-Baptiste Pomet, Dario Prandi
63rd IEEE Conference on Decision and Control, 2024, IEEE, doi: [10.1109/CDC56724.2024.10886255](https://doi.org/10.1109/CDC56724.2024.10886255)
- [3] Cortical origins of MacKay-type visual illusions: A case for the non-linearity
Cyprien Tamekue, Dario Prandi, Yacine Chitour
21st IFAC World Congress, 2023, doi: [10.1016/j.ifacol.2023.10.1613](https://doi.org/10.1016/j.ifacol.2023.10.1613)
- [4] Reproducing Sensory Induced Hallucinations via Neural Fields
Cyprien Tamekue, Dario Prandi, Yacine Chitour
2022 IEEE International Conference on Image Processing (ICIP), 2022, doi: [10.1109/ICIP46576.2022.9898022](https://doi.org/10.1109/ICIP46576.2022.9898022)
- [5] An Auditory Cortex Model for Sound Processing
Rand Asswad, Ugo Boscain, Giuseppina Turco, Dario Prandi, Ludovic Sacchelli
Geometric Science of Information, 2021, Springer International Publishing, doi: [10.1007/978-3-030-80209-7_7](https://doi.org/10.1007/978-3-030-80209-7_7)
- [6] On the decay rate for degenerate gradient flows subject to persistent excitation
Yacine Chitour, Paolo Mason, Dario Prandi
IFAC-PapersOnLine 53.2 (2020), pp. 1709–1714, doi: [10.1016/j.ifacol.2020.12.2246](https://doi.org/10.1016/j.ifacol.2020.12.2246)
- [7] A bio-inspired geometric model for sound reconstruction (Extended Abstract)
Ugo Boscain, Ludovic Sacchelli, Dario Prandi, Giuseppina Turco
20th IFAC World Congress, 2020
- [8] A Cortical-Inspired Model for Orientation-Dependent Contrast Perception: A Link with Wilson-Cowan Equations
Marcelo Bertalmío, Luca Calatroni, Valentina Franceschi, Benedetta Franceschiello, Dario Prandi
Scale Space and Variational Methods in Computer Vision, 2019, Springer International Publishing
- [9] Cortical-inspired image reconstruction via sub-Riemannian geometry and hypoelliptic diffusion
Boscain, Ugo, Chertovskih, Roman, Gauthier, Jean-Paul, Prandi, Dario, Remizov, Alexey
SMAI 2017 – ESAIM: ProcS 64 (2018), pp. 37–53, doi: [10.1051/proc/201864037](https://doi.org/10.1051/proc/201864037)
- [10] Image inpainting via a control-theoretical model of human vision
Ugo V. Boscain, Jean-Paul Gauthier, Dario Prandi
2018 14th IEEE International Conference on Control Automation (ICCA), 2018, doi: [10.1109/ICCA.2018.8444289](https://doi.org/10.1109/ICCA.2018.8444289)

- [11] Recent results on the essential self-adjointness of sub-Laplacians, with some remarks on the presence of characteristic points
Dario Prandi, Valentina Franceschi, Luca Rizzi
Séminaire de Théorie spectrale et géométrie (Grenoble), 33, 2015-2016, DOI: [10.5802/tsg.311](https://doi.org/10.5802/tsg.311)
- [12] Image processing in the semidiscrete group of rototranslations
Dario Prandi, Ugo Boscain, Jean-Paul Gauthier
Geometric science of information, 2015, Springer, Cham, DOI: [10.1007/978-3-319-25040-3_67](https://doi.org/10.1007/978-3-319-25040-3_67)
- [13] Image reconstruction via non-isotropic diffusion in Dubins/Reed-Shepp-like control systems
U. Boscain, J. P. Gauthier, D. Prandi, A. Remizov
53rd IEEE Conference on Decision and Control, 2014, DOI: [10.1109/CDC.2014.7040056](https://doi.org/10.1109/CDC.2014.7040056)

Talks in international conferences

- [1] Modelling sensory cortical activity via neural fields and sub-Riemannian geometry
Sub-Riemannian geometry and beyond IV. Fribourg, Switzerland, 27 June 2025.
- [2] Magnetic Hardy inequalities in the Heisenberg group
Frontiers in Sub-Riemannian Geometry. CIRM, Marseille. 26 November 2024.
- [3] Magnetic Hardy inequalities in the Heisenberg group
Groningen-Oldenburg-Utrecht seminar on analysis and mathematical physics.
- [4] Magnetic Hardy inequalities in the Heisenberg group
Dispersion and Geometry in Padova. Padova, Italy. 7 May 2024
- [5] Reproducing sensory induced visual hallucinations via neural fields, a case for the non- linearity
SIAM Conference on Control and Its Applications (CT23). Philadelphia, USA. 26 July 2023
- [6] Magnetic fields in the Heisenberg group
Hypoelliptic Operators in Geometry. MFO, Oberwolfach. 25 May 2023
- [7] On the decay rate for degenerate gradient flows subject to persistent excitation
Congrès SMAI 2021 - 10ième Biennale Française des Mathématiques Appliquées et Industrielles. La Grande Motte, France. 24 June 2021
- [8] On the essential self-adjointness of singular sub-Laplacians
Mini-workshop "Self-adjoint extensions in new settings", MFO, Oberwolfach, Germany. 10 October 2019.
- [9] Weyl law for singular Laplace-Beltrami operators
Asymptotic Analysis & Spectral Theory, University Paris-Sud, Orsay, France. 02 October 2019.
- [10] Weyl law for singular Riemannian manifolds
EquaDiff2019, Leiden, The Netherlands. 08 July 2019.
- [11] Weyl law for singular Riemannian manifolds
Journées sous-riemanniennes, Grenoble, France. 16 October 2018.
- [12] Weyl law for singular elliptic operators
A sub-Riemannian day in Padova, Italy. 14 September 2018.
- [13] Cortical-inspired functional lifting for image inpainting
SIAM conference on Imaging Science, Bologna, Italy. 5 June 2018.
- [14] Anthropomorphic image reconstruction via sub-Riemannian geometry and hypoelliptic diffusion
Delays and constraints in distributed parameter systems, Gif-sur-Yvette, France. 24 November 2017.
- [15] Quantum confinement and spectral analysis of degenerate operators on Riemannian manifolds
VII Partial differential equations, optimal design and numerics, Benasque, Spain. 22 August 2017.
- [16] A variational formulation of the sub-Riemannian model of the primary visual cortex
Geometric Analysis in Control and Vision Theory, Voss, Norway. 11 May 2016.
- [17] Image processing in the semidiscrete group of rototranslations
2nd Conference on Geometric Science of Information, École Polytechnique. 20 October 2015.
- [18] A sub-Riemannian Santaló formula with applications to isoperimetric inequalities and Dirichlet spectral gap of hypoelliptic operators
PGMO Days 2015, ENSTA ParisTech, Palaiseau. 28 October 2015.

- [19] Self-adjointness of intrinsic diffusions in almost-Riemannian structures
Thematic day on Analysis and geometry of almost-Riemannian manifolds, IHP, Paris. 03 December 2014.
- [20] Intrinsic hypoelliptic diffusions in sub-Riemannian and almost-Riemannian geometry
Thematic day on Hypoelliptic diffusion: analysis and control, IHP, Paris. 06 November 2014.
- [21] Spectral properties and Aharonov-Bohm effect on Grushin-like structures
First International Joint Meeting, Bilbao, Spain. 02 July 2014.
- [22] The Laplace-Beltrami operator on conic and anti-conic surfaces
Geometry and Control, Steklov Institute, Moscow, Russia. 17 April 2014.
- [23] Heat and Schrödinger equation on conical and anticonical-type manifolds
Control of PDEs, CNAM, Paris. 02 April 2014.
- [24] Complexity in control-affine systems
Mathematical Control in Trieste, SISSA, Trieste, Italy. 05 December 2013.
- [25] Dynamics of a quantum particle on a conical-like surface
Conical Intersections in Mathematical Physics, IHP, Paris. 31 May 2013.
- [26] The Laplace-Beltrami operator on conic-type surfaces
Non Linear Control: Geometric Methods and Applications, Firenze, Italy. 19 April 2013

Other talks

- [1] On the Realization of Cyclic–Sequential Dynamics in Cortical Population Models.
Groupe de Travail de Contrôle (LJLL, Sorbonne Université). 20 February 2026.
- [2] Weyl's law for singular Riemannian manifolds
Analysis seminar, University of Warwick. 2 November 2023.
- [3] Neural fields equations for visual illusions
Séminaire d'automatique du plateau de Saclay, Université Paris-Saclay, Gif-sur-Yvette. 12 October 2023.
- [4] Reproducing sensory induced visual hallucinations via neural fields
Imaging in Paris Seminar, IHP, Paris. 15 December 2022.
- [5] Reproducing sensory induced visual hallucinations via neural fields
Séminaire McTAO, INRIA Sophia-Antipolis. 25 May 2022.
- [6] A sub-Riemannian Santaló formula with applications to isoperimetric inequalities and Dirichlet spectral gap of hypoelliptic operators
Floris Takens Seminar, University of Groningen, Netherlands. 25 January 2022.
- [7] Cortical-inspired Wilson-Cowan-type equations for orientation-dependent contrast perception modelling
Université de l'Artois, Lens. 16 Decembre 2021.
- [8] On the regularity of abnormal minimizers for rank 2 sub-Riemannian structures
Moscow seminar on geometric theory of optimal control. 14 April 2021.
- [9] Point interactions for 3D sub-Laplacians
Oberseminar Analysis/Numerik, Universität Oldenburg. 14 January 2021.
- [10] Point interactions for 3D sub-Laplacians
Sub-riemannian international online seminar. 08 January 2021.
- [11] Self-adjointness e teoria spettrale per (sub-)laplaciani singolari
Seminario FIM, Università di Modena e Reggio Emilia, Italy. 25 January 2018.
- [12] Loi de Weyl avec reste et estimés du noyau de la chaleur sur variétés riemanniennes non-complètes
Séminaire de Théorie spectrale et géométrie, Institut Fourier, Grenoble. 30 November 2017.
- [13] Sur le caractère auto-adjoint et la théorie spectrale des opérateurs de type Hörmander singuliers
Séminaire d'Analyse, Université de Tours. 09 November 2017.
- [14] Quantum confinement and spectral theory of (sub-)Laplacians
Séminaire de Géométrie sous-riemannienne, IHP, Paris. 04 October 2017.
- [15] Quantum confinement in non-complete Riemannian manifolds
25e colloque Jeunes Chercheurs Alain Bouyssy, Orsay, Paris. 02 March 2017.

- [16] Neuro-geometry of vision and applications to image processing
Seminario FIM, Università di Modena e Reggio Emilia, Italy. 11 February 2016.
- [17] A variational formulation of the sub-Riemannian model for the primary visual cortex
Séminaire "Analyse numérique et EDP", Université Paris Sud-Orsay. 26 November 2015.
- [18] Reconstruction and pattern recognition via the Citti-Petitot-Sarti model
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- [19] Complexity of control-affine motion planning
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- [20] The heat and Schrödinger equations on conic and anticonic-type
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- [21] Complexity of control-affine motion planning
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- [22] The heat and Schrödinger equations on conic and anticonic-type surfaces
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- [23] Complexity in affine control systems
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- [24] Complexity in affine control systems
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Posters

- [1] Hardy-type inequalities and spectral bounds for hypoelliptic operators of Hörmander type
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- [2] Highly corrupted image inpainting through hypoelliptic diffusion
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Languages

Mother tongue: **Italian**, Fluent: **English, French**