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Positions

- May 2019 – Present: *Assistant Professor*, Indian Institute of Technology Bombay, Mumbai, India.
- September 2018 – April 2019: *Postdoctoral Fellow*, McGill University, Montréal, Canada.
Supervisors: Pengfei Guan, Niky Kamran and Jérôme Vétois.
- September 2016 – August 2018: *Postdoctoral Fellow*, University of British Columbia, Vancouver, Canada.
Supervisor: Nassif Ghoussoub.
- October 2015 – August 2016 : *ATER-Doctorat*, Université de Lorraine, Nancy, France.
- November 2016 – September 2015: *Doctorant*, Institut Élie Cartan de Lorraine, Université de Lorraine, Nancy, France. Funding: Fédération Charles Hermite and Région Lorraine.

Education

- 2016: *Ph.D in Mathematics*, Université de Lorraine, Institut Élie Cartan de Lorraine, Nancy, France.
Advisors: Frédéric Robert and Dong Ye.

Thesis Title: Polyharmonic Equations on Manifolds and Asymptotic Analysis of Hardy-Sobolev Equations with Vanishing Singularity.

Defended: June 2016.

Ph.D. committee: Emmanuel Hebey (Université de Cergy-Pontoise), Patrizia Pucci (Università degli Studi di Perugia), Tobias Weth (Goethe-Universität Frankfurt), Yuxin Ge (Université Paul Sabatier, Toulouse), David Dos Santos Ferreira (Université de Lorraine), Frédéric Robert (Université de Lorraine) and Dong Ye (Université de Lorraine).

- 2012: *M.Sc and M.Phil in Mathematics*, Tata Institute Of Fundamental Research-CAM, Bangalore, India.
Advisor: K Sandeep.

Thesis Title: On A Variational Problem with Lack of Compactness: The Effect of the Topology of the Domain .

Defended: September, 2012.

- 2009: *B.Sc (Hons) in Mathematics*, University of Calcutta, Kolkata, India.

Research Interests

Geometric analysis and Nonlinear partial differential equations: Blow-up analysis and Concentration phenomenon in Elliptic PDEs, Prescribing curvature problems, Higher-order conformally invariant PDEs.

Publications

- (12) Sharp quantitative stability of Struwe’s decomposition of the Poincaré-Sobolev inequalities on the hyperbolic space: Part I, with M. Bhakta, D. Ganguly, D. Karmakar. *Adv. Math.* 479 (2025), Paper No. 110447, 84 pp.
- (11) Sharp quantitative stability of Poincaré-Sobolev inequality in the hyperbolic space and applications to fast diffusion flows, with M. Bhakta, D. Ganguly, D. Karmakar. *Calc. Var. Partial Differential Equations.* 64 (2025), no. 1, 23, 47 pp.
- (10) *Existence result for the higher-order Q -curvature equation*, with J. Vétois. *Calc. Var. Partial Differential Equations.* 63 (2024), no.6, 151, 29 pp.
- (9) Non-linear heat equation on the Hyperbolic space: Global existence and finite-time Blow-up, with D. Ganguly, D. Karmakar. *Adv. Differential Equations.* 28 (2023), no. 9-10, 779–805.
- (8) Non-synchronized solutions to nonlinear elliptic Schrödinger systems on a closed Riemannian manifold, with J. Vétois. *Discrete Contin. Dyn. Syst.* 42 (2022), no.11, 5273–5287.
- (7) Hardy’s identities and inequalities on Cartan-Hadamard manifolds, with J. Flynn, N. Lam, G. Lu. *Journal of Geometric Analysis* 33 (2023), no.1, Paper No. 27, 34 pp.
- (6) The Hardy–Schrödinger Operator on the Poincaré Ball: Compactness, multiplicity, and stability of the Pohozaev obstruction, with N. Ghoussoub, F. Robert. *J. Differential Equations* 320 (2022), 510–557.
- (5) Multiplicity and stability of the Pohozaev obstruction for Hardy-Schrödinger equations with boundary singularity, with N. Ghoussoub and F. Robert. *Memoirs of the Amer. Math. Soc.* 285 (2023), no.1415.
- (4) Mass and Extremals Associated with the Hardy-Schroödinger Operator on Hyperbolic Space, with H. Chan, N. Ghoussoub, S. Shakerian, L. Faria. *Adv. Nonlinear Stud.* 18 (2018), no. 4, 671–689.
- (3) Hardy-Sobolev equations with asymptotically vanishing singularity: Blow-up analysis for the minimal energy. *Nonlinear Anal.* 169 (2018), 190–217.
- (2) Struwe’s Decomposition for a Polyharmonic Operator on a Compact Riemannian Manifold with or without boundary. *Commun. Pure Appl. Anal.* 16 (2017), no. 1, 311–330.
- (1) GJMS-type Operators on a compact Riemannian manifold: Best constants and Coron-type solutions. *J. Differential Equations* 261 (2016), no. 9, 4997–5034.

Preprints

- *Compactness for the Hardy-Sobolev equation on manifolds*, with H. Cheikh Ali (2025).
- *Compactness of conformal metrics with constant Q -curvature of higher order*, with B. Premoselli (2025).
- *Barycenter technique for the higher order Q -curvature equation*, with C. B. Ndiaye (2026).

Teaching

- *Indian Institute of Technology Bombay*

2025-2026 Spring semester	MA 824: Functional Analysis
2025-2026 Autumn semester	MA 556: Differential Geometry
2024-2025 Autumn semester	MA 417: Ordinary Differential Equations
2022-2023 Spring semester	MA 534: Introduction to Fourier Analysis
2023-2024 Autumn semester	MA 417: Ordinary Differential Equations
2022-2023 Spring semester	MA 534: Modern Theory of PDE
2022-2023 Autumn semester	MA 205: Complex Analysis
2021-2022 Spring semester	MA 581: Elements of Differential Topology
2021-2022 Autumn semester	MA 817: Partial Differential Equations I
2020-2021 Spring semester	MA 214: Introduction to Numerical Analysis
2020-2021 Autumn semester	MA 817: Partial Differential Equations I
2019-2020 Spring semester	SI 416: Optimization
2019-2020 Autumn semester	SI 507: Numerical Analysis

- *McGill University*

Fall 2018 MATH 262: Intermediate Calculus

- *University of British Columbia*

2017/2018 Summer Term 1	MATH 257/316: Partial Differential Equations / Elementary Differential Equations II
2017/2018 Winter Term 2	MATH 101: Integral Calculus with Applications to Physical Sciences and Engineering
2016/2017 Summer Term 2	MATH 317: Vector Calculus
2016/2017 Winter Term 2	MATH 103: Integral Calculus with application to Life Sciences

- *Université de Lorraine*

2015/2016: Mathematics for Engineers, Computer Sciences, Physics.

- *Others*

- 12/2019 – AIS on Geometric Analysis, IIT Bombay: Series of four lectures on Critical Exponent PDEs.
03/2023 – PDE workshop, IIT Gandhinagar: Lectures on Stability of the Pohozaev obstruction and Non-existence.
02/2024 – Mini course, IIT Kanpur: Compactness and Stability for critical exponent problems.

Last updated: March 2026