



JYOTSHANA V. PRAJAPAT

PROFESSOR

HEAD, DEPT. OF MATHEMATICS (2015-2018)

✉ jyotshana.prajapat@mathematics.mu.ac.in

RESEARCH

- Partial Differential Equations
- Differential Geometry
- Geometric Analysis
- **AMS Subj. Class.: 35J60, 58J70, 35H20**

EDUCATION

- **PhD (1997)** University of Bombay
- **MPhil (1992)** University of Bombay
- **M.Phil, PhD Advisor:** Prof. S.Kumaresan
- **MSc. Mathematics** (April, 1990) with **96.5 %** from the University of Bombay

EXPERIENCE

- June 2013- present: **Professor**
Department of Mathematics, University of Mumbai
- July 2008 - May 2013: **Associate Professor**
The Petroleum Institute, Abu Dhabi, UAE
- July 2006 - July 2008: **Visiting Scientist**
Tata Institute of Fundamental Research, Mumbai
- May 2005 - May 2006: **Assistant Professor**, IITB
- August 2004 - May 2005: **Visiting Assistant Professor**
University of Alabama at Birmingham, USA
- May 1999 - Nov 2004: **Assistant Professor**
Indian Statistical Institute, Bangalore
- Feb 1999 - May 1999: **Fellow (D)**
TIFR Center, Bangalore
- Feb 1996 - Feb 1999: **Visiting fellow**
Tata Institute of Fundamental Research, Mumbai

SCHOLARSHIPS AND GRANTS

- **Chebyshev Grant for ICM 2022**
- **Senior Research Associate**, ICTP (2018-2023)
- **GIAN Program** (Oct 23-27, 2017) (<https://www.iitk.ac.in/oir/gian>)
- **Distinguished evaluator for the Excellence Initiative** promoted by the Government of Spain (2015 & 2018)
- **International Mathematical Union grant** for ICM 2002 at Beijing and ICM 2006 at Madrid.
- **Indo-French grant** to visit Ceremade, Universite' Paris IX Dauphine (Oct 30 - Dec 12, 2000)
- **Junior Visiting Professor** at Dipartimento di Matematica, La Sapienza, University of Rome I (Sept 6 - Dec 6, 1998)
- **CNRS Post-doctoral scholarship** at Laboratoire d'Analyse Numerique, University of Paris VI (Oct 13, 1997 - Jan 13, 1998)
- **NBHM Scholarship** for PhD
- **UGC Scholarship** for MSc

PUBLICATIONS :

- Kumaresan, S. and Prajapat, J.V., "Serrin's Result for Hyperbolic Space and Sphere" **Duke Mathematical Jr., Vol. 91, No. 1, 17-28 (1998).**
- Prajapat, J. V., "Serrin's result for domains with a Corner or Cusp" **Duke Mathematical Jr., Vol. 91, No. 1, 29-31 (1998).**
- Kumaresan, S. and Prajapat, J.V. "Analogue of Gidas-Ni-Nirenberg result for Domains in Hyperbolic Space and Sphere" **Rendiconti Dell'istituto Di Matematica, Dell'Universita Di Trieste, Nuova Serie, 30, No. 1-2 (1999).**
- Birindelli, I. and Prajapat, J.V. "Nonlinear Liouville theorems in the Heisenberg group, via the moving planes methods" **Comm. in PDE, Vol.24, No. 9 and 10, 1875- 1890 (1999).**
- Prajapat, J.V. and Tarantello, G., "On a class of Elliptic problems in $\mathbb{R}^n$: Symmetry and Uniqueness Results" University of Rome, Tor Vergata Preprint, **Proc. Royal Soc. Edinburgh, Vol.131, Part 4, 967-985 (2001).**
- Birindelli, I. and Prajapat, J.V. "One dimensional symmetry in the Heisenberg Group" **Ann. Scuola Norm. Sup. Pisa Cl. Sci.(4), Vol.XXX, 269-284 (2001).**
- Birindelli, I. and Prajapat, J. V. "Monotonicity and symmetry results for degenerate elliptic equations on nilpotent Lie groups" **Pacific Jr. of Math., Vol.204, No.1, 1-18 (2002).**
- Brock, F. and Prajapat, J.V. "Some new symmetry results for elliptic problems on sphere and in Euclidean space" **Rendiconti del Circolo Matematica di Palermo(2), Vol.49, No.3 (2003).**
- Prajapat, J.V. and Ramaswamy, M. "Apriori estimates for solutions of sub-critical equations on CR sphere" **Advanced Nonlinear Studies, Vol.3, No.3, 355-395 (2003).**
- Giacomoni, J., Prajapat, J.V. and Ramaswamy, M., "Positive solution branch for elliptic problems with critical indefinite nonlinearity" **Differential Integral Equations 18, no. 7, 721—764 (2005).**
- Magnanini, R., Prajapat, J.V. and Sakaguchi, S., "Stationary isothermic surfaces and uniformly dense domains" **Trans. Amer. Math. Soc. 358, no.11, 4821—4841 (2006).**
- Lin, C-S. and Prajapat, J. V. "Harnack type inequality and apriori estimates for solutions of a class of semilinear elliptic equations" **J. Differential Equations 244 , no. 3, 649—695 (2008).**
- Lin, C-S. and Prajapat, J. V. "Asymptotic symmetry of singular solutions of semilinear elliptic equations" **J. Differential Equations 245, no. 9, 2534—2550 (2008).**
- Lin, C-S and Prajapat, J. V. "Vortex condensates for relativistic abelian Chern-Simons model with two Higgs scalar fields and two gauge fields on a torus" **Communications in Mathematical Physics, Volume 288, Number 1 / May, 311-347 (2009).**
- Emamizadeh, B. and Prajapat, J. V. "Symmetry in rearrangement optimization problems", **Electronic Journal of Differential Equations, Vol. 2009(2009), No. 149, pp. 1-10.**
- Prajapat, J. V. "Taylor series expansion for an analytic hypersurface in $\mathbb{R}^n$ " **Taiwanese Journal of Mathematics, 14 (2010), no. 6, 2277-2289.**
- Emamizadeh B., Prajapat J. V. and Shahgholian H, "A two phase free boundary problem related to quadrature domains" **Potential Analysis 34, 119-138 (2011).**
- Emamizadeh, B. and Prajapat, J. V. "Minimax rearrangement optimization problems" **Optimization letters, Vol. 5 (2011) no. 4, pp. 647-664.**

PUBLICATIONS :

- Lindgren, Erik, Prajapat Jyotshana V. Optimal regularity of a parabolic free boundary problem of two-phase type with coefficients worse than Lipschitz, **Potential Analysis, 37 (2012), no. 2, 103-123.**
- Avetik Arkelyan, Shahgholian, Henrik, Prajapat Jyotshana V. Two and multiphase quadrature surfaces, **Communications on Pure and Applied Analysis, September 2017.**
- Sharma Vandana, Prajapat Jyotshana V., Global existence of solutions to reaction diffusion systems with mass transport type boundary conditions on an evolving domain, **Discrete and Continuous Dynamical System, January 2022, 42(1): 109-135.**
- Prajapat Jyotshana V., Varghese Anoop, " Geodetically convex sets in the Heisenberg group , H^n $n \geq 1$ ", **J. Pseudo-Differ. Oper. Appl. (2024) 15:10.**
- Prajapat Jyotshana V., Varghese Anoop, "Symmetry and classification of solutions to an integral equation in the Heisenberg group H^n ", **Published online on February 13, 2025 in Mathematische Annalen**

Events Organized (since joining University of Mumbai)

- **IWM May 12th initiative seminar series held on** 15 June 2022, 15 June 2023, 15 June 2024
- **Special session** on Symmetry and Overdetermined Problems **(SS140) in 14th AIMS conference Abu Dhabi**, December 16-20, 2024.
- **Teacher's Enrichment Workshop in PDE**, Jan 15-20, 2024, supported by NCM
- **International Symposium in PDE & Geometric Analysis**, (online) March 18-19, 2022
- **Short course in Parabolic PDE with applications to Physics**, (online) August 22-27, 2022
- **UGC-HRDC Refresher course** in Financial Mathematics (under RUSA), Dec.13-27, 2019
- **National Mathematics Day**, Dec. 22, 2018, with NCM and UM-DAE CEBS.
- **"International Conference in Mathematics"** celebrating Centenary year of Professor S.S.Shrikhande, the founding Head of University Department of Mathematics (Jan 22 - 25, 2018). Funding of Rs. 300,000 from NCM, Rs.2,95,000/- from NBHM and Rs. 500,000/- from DST purse
- **GIAN course** by Prof. Henrik Shahgholian, KTH Sweden (Oct 23 - 27, 2017),
- **NBHM sponsored** workshop on Basic Complex Analysis with funding of Rs. 95000/- (Feb 1 - 6, 2016)
- Basic course in Algebra and Analysis workshop (Dec 14 - 19, 2015)