DHARMENDRA KUMAR
School of Mathematics and Statistics
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WORK EXPERIENCE

Assistant Professor at University of Hyderabad, Hyderabad, India (From March 2024 to present).

Postdoc Fellow at Department of Mathematics, Indian Institute of Science, Bangalore (From October 2022 to March 2024).
Advisor: Prof. Swarnendu Sil

Postdoc Fellow at Tata Institute of Fundamental Research, Centre For Applicable Mathematics, Bangalore (From October 2020 to October, 2022).
Advisor: Prof. Agnid Banerjee

EDUCATION

**Ph.D. in Mathematics** (2014–2020)

Indian Institute of Technology, Gandhinagar

Dissertation Topic: "Studies on the existence and qualitative questions of singular elliptic PDE"

Advisor: Prof. Jagmohan Tyagi

**M.Sc in Mathematics**

IIT, Guwahati

Project Title: "Schauder Basis in Banach space"

Advisor: Prof. Anjan K. Chakrabarty

**B.Sc in Mathematics**

Patna Science College, Patna

RESEARCH INTERESTS

- Partial Differential Equations
- Calculus of Variations
- Nonlinear Functional Analysis

REFEREED PUBLICATIONS

[P1] Kumar Dharmendra, Sil Swarnendu: BMO estimates for Hodge-Maxwell systems with discontinuous anisotropic coefficients, Nonlinear. Anal. 2025, 260, 113852.

[P2] Arya, Vedansh; Kumar, Dharmendra: Borderline gradient continuity for fractional heat type operators. Proc. Roy. Soc. Edinburgh Sect. A 153 (2023), no. 5, 1651–1682.

[P3] Arya, Vedansh; Kumar, Dharmendra: Carleman estimates for sub-Laplacians on Carnot groups. Anal. Math. Phys. 13 (2023), no. 4, Paper No. 55, 17 pp.

[P4] Kumar, Dharmendra: Positive solution to singular semilinear elliptic problems. Complex Var. Elliptic Equ. 67 (2022), no. 11, 2708–2718.

[P5] Kumar, Dharmendra: Boundary differentiability of solutions to elliptic equations in convex domains in the borderline case. Anal. Math. Phys. 12 (2022), no. 6, Paper No. 131, 20 pp.

[P6] Ghosh, Suchandan; Kumar, Dharmendra; Prasad, Harsh; Tewary, Vivek: Existence of variational solutions to doubly nonlinear nonlocal evolution equations via minimizing movements. J. Evol. Equ. 22 (2022), no. 3, Paper No. 74, 40 pp.

[P7] Kumar, Dharmendra; Tyagi, Jagmohan: Lyapunov-type inequalities for singular elliptic partial differential equations. Math. Methods Appl. Sci. 44 (2021), no. 7, 5593–5616.

[P8] Kumar, Dharmendra; Tyagi, Jagmohan: Singular elliptic equations with quadratic gradient term. J. Math. Anal. Appl. 502 (2021), no. 1, Paper No. 125245, 20 pp.

[P9] Kumar, Dharmendra: Positive solution to singular elliptic problems with subcritical nonlinearities. Nonauton. Dyn. Syst. 6 (2019), no. 1, 99–107.

[P10] Kumar, Dharmendra: Semilinear elliptic problems with singular terms on the Heisenberg group, Complex Var. Elliptic Equ. 64 (2019), no. 11, 1844–1853.

## Teaching Experience

**Current Semester at University of Hyderabad**

Real Analysis (For Integrated MSc Students) *Fall 2026*

Math-II (For Integrated MTech Students) *Fall 2026*

**Past Courses at University of Hyderabad**

Functional Analysis (For MSc Students) *Spring 2024*

Real Analysis - II (Advanced Multivariable Calculus) (For MSc Students) *Fall 2025*

Probability and Statistics (For Integrated MSc Students) *Spring 2024, 2025*

Math - II (For Integrated MTech Students) *Fall 2025*

Math - I (For Integrated MTech Students) *Spring 2024*

**Teaching Assistant in the workshop**

NCM AIS on "Elliptic and Parabolic PDEs" at IISc Bangalore *December 4 - 23, 2023*

**Teaching Assistant at IISC Bangalore**

Analysis and Linear Algebra (For B.Tech, BSc Students) *Fall 2023*

Functional Analysis (For MSc, PhD Students) *Spring 2023*

Ordinary Differential Equation (For BSc, MSc and PhD Students) *Fall 2024* (Till Midterm Exam)

**Teaching Assistant at TIFR CAM Bangalore**

Analysis and Linear Algebra (For BSc Students) *Summer Workout in Mathematics (SWIM) 2022*

**Teaching Assistant at IIT Gandhinagar**

Linear Algebra and Ordinary Differential Equation (For BTech Students) *Spring 2016, 2017*

Complex Analysis and Partial Differential Equation (For BTech Students) *Fall 2015, 2018*

Mathematical Methods in Engineering (For MTech Students) *Fall 2016, 2017*

Ordinary Differential Equation (For MSc Students) *Spring 2018*

Introduction to Real Analysis (For BTech Students) *Summer Term 2018, 2019*

INVITED TALK/SEMINARS

- April 13, 2023, IISC Bangalore, India
  " Borderline regularity results for Dirichlet problem in nondivergence form "
- Sept 27, 2021, TIFR CAM, Bangalore, India
  " Borderline regularity results for Dirichlet problem in nondivergence form "
- Jan 24, 2020, TIFR CAM, Bangalore, India
  " Singular Elliptic Equations with Quadratic Gradient Term "
- Jan 29, 2020, IIT Gandhinagar, India
  " Singular Elliptic Equations with Quadratic Gradient Term "
- Jan 18, 2019, IIT Gandhinagar, India
  " Semilinear Elliptic Problems With Singular Terms On The Heisenberg Group "

LIST OF WORKSHOPS ATTENDED

- Annual Foundation School, Part II (2013), IIT Kanpur.
- Annual Foundation Schools, Part I (2014), NISER, Bhubaneswar.
- Variational Analysis and Optimization, 2015, IIT Gandhinagar.

SERVICE TO IISC, BANGALORE

- Grading of the NBHM scholarship exam (2024)
- Judges in STEMposium, Pravega X (2024)

HONORS AND AWARDS

- Qualified JAM in Mathematics.
- Qualified NET in Mathematics.
- Qualified GATE in Mathematics.
- NBHM Postdoc Fellowship.

REFEREE / REVIEWER

- Analysis and Mathematical Physics.
- The Journal of Analysis.