

**DHARMENDRA KUMAR**  
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University of Hyderabad  
Hyderabad, India

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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: Dr. 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) (Thesis defended successfully on July 29, 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
- 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, <https://arxiv.org/abs/2310.06615>.
- [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.

LIST OF ADVANCED COURSES ATTENDED AT TIFR CAM, BANGALORE

- Topics course on Regularity Theory, Fall 2020
- Topics course on Harmonic Function Theory, Fall 2020
- Graduate course on Harmonic Analysis, Spring 2021
- Topics course on Calculus of Variations, Spring 2021
- Graduate course in Advanced PDE, Spring 2022

LIST OF ADVANCED COURSES ATTENDED AT IISC BANGALORE

- Fourier Analysis, Spring 2023
- Introduction to the Calculus of Variations, Spring 2023

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.

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 ”

TEACHING EXPERIENCE

**Tutor 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

*Fall 2023*

Functional Analysis

*Spring 2023*

Ordinary Differential Equation

*Fall 2024 (Till Midterm Exam)*

**Teaching Assistant at TIFR CAM Bangalore**

Analysis and Linear Algebra

*Summer Workout in Mathematics (SWIM) 2022*

**Teaching Assistant at IIT Gandhinagar**

Linear Algebra and Ordinary Differential Equation

*Spring 2016, 2017, 2018*

Complex Analysis and Partial Differential Equation

*Fall 2015, 2018*

Mathematical Methods in Engineering

*Fall 2016, 2017*

Introduction to Real Analysis

*Summer Term 2018, 2019*

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.

REFERENCES

Jagmohan Tyagi

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Department of Mathematics  
Indian Institute of Technology, Gandhinagar, India  
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Swarnendu Sil

Assistant Professor  
Department of Mathematics  
Indian Institute of Science, Bangalore, India  
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Agnid Banerjee

Associate Professor  
School of Mathematical and Statistical Sciences at Arizona State University, Tempe  
*E-mail:* agnid.banerjee@asu.edu

Mohan Joshi

Visiting Professor  
Department of Mathematics  
Indian Institute of Technology, Gandhinagar, India  
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