

RESEARCH INTERESTS

I am working as an Assistant Professor at the Mathematics Department, Central University of Rajasthan. My area of research is Analysis of PDEs, particularly in the areas of Calculus of Variations. The primary subjects of my research work include **Fractional Differential Equations, Degenerate Elliptic Problems, Analysis of Chemotaxis Systems (Parabolic PDEs) and Lane-Emden Systems**. Specifically, I investigate questions concerning existence, uniqueness, multiplicity and asymptotic behaviour of solutions.

EXPERIENCE

Postdoctoral Fellow Indian Institute of Technology Bombay	11 June 2024-26 Nov 2024
Vikram Sarabhai Research Fellow Indian Institute of Technology Gandhinagar	11 July 2023-10 June 2024

EDUCATION

Ph.D. in Mathematics, Indian Institute of Technology Gandhinagar Thesis title: Investigations on critical local and nonlocal problems Advisor: Prof. Jagmohan Tyagi Course-work CPI- 9.76/10	2020-2023
M.Sc. in Mathematics, Savitiribai Phule Pune University, Pune CGPA: 9.8/10	2017-2019
B.Sc. in Mathematics, Savitiribai Phule Pune University Percentage: 93.94 %	2014-2017

PUBLICATIONS

1. **S. Gandal and J. Tyagi**, *Multiplicity of solutions to degenerate elliptic problems involving the Grushin operator*, to appear in Journal of Mathematical Analysis and Applications, 2026. (Quartile Q1).
2. **S. Gandal**, *Three non-zero solutions of a Neumann eigenvalue problems involving the fractional p -Laplacian*, Journal of Elliptic and Parabolic Equations, 1-17 (2025) (Quartile Q2).
3. **S. Gandal and J. Tyagi**, *Existence and shape of solutions for a class of elliptic systems on the critical hyperbola*, Complex Variables and Elliptic Equations, 1-37 2025 (Quartile Q2).
4. **S. Gandal and J. Tyagi**, *Asymptotic behaviour of the least energy solutions of fractional semilinear Neumann problem*, Journal of the Australian Mathematical Society, 2025 (Quartile Q2).
5. **A. Akilandeewari, S. Gandal and J. Tyagi**, *Global weak solutions for time-space fractional Keller- Segel systems*, Zeitschrift für Analysis und ihre Anwendungen, 2025 (Quartile Q2).
6. **C. O. Alves, S. Gandal, A. Loiudice and J. Tyagi**, *Brezis-Nirenberg type problem for a class of degenerate elliptic equations involving the Grushin operator*, The Journal of Geometric Analysis, Volume 34, 52(2024) (Quartile Q1)

7. **S. Gandal and J. Tyagi**, *The Neumann problem for a class of semilinear fractional equations with critical exponent*, Bulletin des Sciences Mathématiques, 188 (2023), Paper No. 103322, 35 pp. (Quartile Q1).

TEACHING EXPERIENCE

- **Assistant Professor** at Central University of Rajasthan November 28, 2024-present date
- **Graduate Teaching Fellow** at IIT Gandhinagar Summer, 2021-22
MA 102 Calculus of Several Variables and Complex Variables
- **Graduate Teaching Fellow** at IIT Gandhinagar Fall, 2023-24
MA 203 Numerical Methods
- **Graduate Teaching Fellow** at IIT Gandhinagar Fall, 2023-24
MA 204 Partial Differential Equations
- **Teaching Assistant** at IIT Gandhinagar
MA 507 Ordinary Differential Equation
MA 603 Partial Differential Equations
MA 624 Stochastic Differential Equations

AWARDS AND ACHIEVEMENTS

- CSIR-NET JRF with AIR-47 2019
- Graduate Aptitude Test in Engineering (GATE) 2019
- State Eligibility Test (SET) for Assistant professor, Maharashtra 2019
- Secured 5th rank in the university as an overall topper of BSc 2017
- Recipient of the PUMATH scholarship of Dept. of Mathematics, Savitribai Phule Pune University 2018-19
- Recipient of the Mahatma Jyotirao Phule Guntant Vidyarthi Scholarship, Savitribai Phule Pune University 2018

SKILLS AND CERTIFICATES

- **Computer Programming:** Python, Matlab (Basic).
- **Typing Software:** LATEX.
- **Certificate in Scientific Writing**, awarded by IIT Gandhinagar, 2022.
- **Python Basics Bootcamp**, Conducted by DPhi, 2022.
- **Languages:** Can read, write and speak Marathi, English, Hindi.

CONFERENCES AND WORKSHOPS

- A Symposium on Luis Caffarelli's works, TIFR CAM Bangalore, 05-09 June, 2023.
- Workshop on analysis of differential equations, IIT Gandhinagar, 01-03 March 2023.
- 37th annual conference of Ramanujan mathematical society, SSN college of engineering, 06-08 December 2023.
- Lecture series on Elementary Elliptic PDEs at IIT Gandhinagar, Feb-2021 (Instructor: **Enrico Valdinoci**).
- Lecture series on Analysis of Chemotaxis Systems at IIT Gandhinagar, Feb-2022 (Instructor: **Michael Winkler**).
- Workshop on inverse problems and related topics, ICTS Bangalore, October 2021.
- Research meet on partial differential equations: recent developments, IIT Gandhinagar, February 2020.
- Mathematics training and talent search programme (MTTS), IIT Madras, June 2016.

TALKS/SEMINARS

- Distribution theory and its applications to PDEs, Graduate Student's Seminar, IIT Gandhinagar, 24 March 2023.
- The Neumann problem for a class of semilinear fractional equations with critical exponent, IIT Gandhinagar, 03 march 2023.
- Fractional Laplacian and nonlocal problems, Graduate Student's Seminar, BITS Goa, 16 January 2021.

PERSONAL INFORMATION

Dr. Somnath Gandal

Assistant Professor, Department of Mathematics,

Central University of Rajasthan, Ajmer, India.

Office No- 317, A5 building.

Date of Birth: 01 July 1996.