

Curriculum Vitae

Dr. Uttam Kumar

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Professional Synopsis

- 21 March 2023– 20 March 2025 **Institute Postdoctoral Fellow (I-PDF)** in Mathematics
Indian Institute of Technology Kanpur (**IIT Kanpur**)
Mentor: Prof. Prosenjit Roy
- 01 Jan 2017 – 21 Nov 2022 **Ph.D.** in Mathematics
Indian Institute of Technology Guwahati (**IIT Guwahati**)
Ph.D. Course-work: First Division
Thesis Title: [On nonlocal purely critical and supercritical problems and superlinear semipositone problems.](#)
Thesis submission date: 20th July 2022
Viva Voce date: 21st November 2022
Ph.D. Degree date: 5th April 2023
Thesis Supervisor: Prof. Sweta Tiwari

Research Interests

- Local and nonlocal elliptic differential equations
- Critical and Supercritical exponent problems
- Semipositone problems
- Boundary blow up problems
- Fully nonlinear partial differential equations
- Neural networks for solving differential equation

Awards and Fellowships

- 21 March 2023 Received an **Institute Postdoctoral Fellow** position in Mathematics, Indian Institute of Technology Kanpur (**IIT Kanpur**), India.
- 19 June 2016 Qualified CSIR-NET, National Eligibility Test for Lectureship (CSIR-JRF, AIR-11 in June-2016) - Mathematics, India.
- 31 January 2016 Qualified Graduate Aptitude Test in Engineering (GATE, AIR-203 in 2016) - Mathematics, India.
- 2013 Qualified Joint Admission Test for M.Sc. (JAM, AIR-8) - Mathematics, India.

Tutor / Teaching Assistant at IIT Kanpur

Jan-Feb, 2025	MTH 113M: Introduction Linear Algebra, Department of Mathematics & Statistics, IIT Kanpur.
Oct-Nov, 2024	MTH 111A: Applications of Single Variable and Several Variable Calculus Department of Mathematics & Statistics, IIT Kanpur.
Aug-Sept, 2024	MTH 111M: Single Variable Calculus, Department of Mathematics & Statistics, IIT Kanpur.
March-April, 2024	MTH 113M: Ordinary Differential Equations, Department of Mathematics & Statistics, IIT Kanpur.
Jan-Feb, 2024	MTH 113M: Introduction Linear Algebra, Department of Mathematics & Statistics, IIT Kanpur.
Oct-Nov, 2023	MTH 112M: Applications of Single Variable and Several Variable Calculus, Department of Mathematics & Statistics, IIT Kanpur.
Aug-Sept, 2023	MTH 111M: Single Variable Calculus, Department of Mathematics & Statistics, IIT Kanpur.

Teaching Assistant at IIT Guwahati

Jul-Nov, 2021	MA201: Complex Analysis and Partial Differential Equations
Nov-20-Feb-21	MA101: Single Variable and Multivariable Calculus
Jul-Nov, 2020	MA201: Complex Analysis and Partial Differential Equations
Jan-May, 2020	MA102: Linear Algebra and Ordinary Differential Equations
Jul-Nov, 2019	MA201: Complex Analysis and Partial Differential Equations
Jan-May, 2019	MA102: Multivariable Calculus and Ordinary Differential Equations
Jul-Nov, 2018	MA201: Complex Analysis and Partial Differential Equations

Seminars/Conferences/ Presentations

- “Sign-changing solutions to fractional p-Laplacian problem with purely critical non-linearity in symmetric domains,” UNC Greensboro PDE Conference of 2021, Virtual Conference, July 24-25, 2021 (**contributed talk**).
- National conference on recent trends in mathematical modelling and its applications, ICFAI University Tripura, August 23-27, 2021 (**attended**).
- “Boundary blow up solutions involving fractional p-Laplacian Operator,” 38th Annual Conference of Ramanujan Mathematical Society, IIT Guwahati, December 22-23, 2023 (**contributed talk**)

Workshops/Schools

- National Centre for Mathematics workshop on “AIS Geometric Analysis” held at IIT Bombay, Mumbai during December 09-28, 2019.
- Virtual workshop on “Methods on Nonlinear Analysis”, Kennesaw State University, Georgia, USA, November 14-15, 2020.
- Webinar on “PDE and related areas” organized online by IIT Kanpur in collaboration with TIFR-CAM, IISER-PUNE and IISER-KOLKATA, India during September 3-December 15, 2020.
- Workshop cum International Symposium on Complete Flux Scheme for Convection Diffusion Reaction Models, Flow and Allied Topics, Department of Mathematics IIT Kanpur, January 18-21, 2024.

Computer Skills

- Work experience with Windows 11, Linux, MS office packages and several other utility softwares
- Experience in working with [C](#), [Matlab](#), [Python](#), [LATEX](#)

Publications/Submitted

- [1] **U. Kumar** AND S. Tiwari, *Multiple sign-changing solutions of nonlocal critical exponent problem in symmetric domains*, [Mediterranean Journal of Mathematics](#).
- [2] **U. Kumar** AND S. Tiwari, *Multiple solutions to Bahri-Coron problem involving fractional p -Laplacian in some domains with non-trivial topology*, [Topological Methods in Nonlinear Analysis](#).
- [3] **U. Kumar** AND S. Tiwari, *Multiple sign-changing solutions of nonlocal supercritical exponents problems in symmetric domains*, [Mediterranean Journal of Mathematics](#).
- [4] R. Dhanya, R. Jana, **U. Kumar** AND S. Tiwari, *Positive solutions for fractional p -Laplacian semi-positone problem with superlinear critical growth*, [Mathematical Methods in Applied Sciences](#).
- [5] **U. Kumar**, *Large solution to nonlocal problems with weighted nonlinear terms*. (**Submitted**)
- [6] R. Dhanya, R. Jana, **U. Kumar** AND S. Tiwari, *Fine boundary regularity for fractional (p,q) -Laplacian*. (**Submitted**)

References

- **Prof. Sweta Tiwari** (Thesis supervisor)
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695551, Kerala, India.
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