Vivek Tewary, PhD

Postdoctoral Fellow
TIFR Centre for Applicable Mathematics
Bangalore 560065

PERSONAL DATA

Full Name:	Vivek Tewary
Date & Place of Birth:	16.10.1987, Lucknow, India
Nationality:	Indian
E-mail:	vivektewary@protonmail.com,vivek2020@tifrbng.res.in
Website:	https://vivektewary.github.io

RESEARCH INTERESTS

Main: Homogenization of PDEs, Quasilinear Elliptic & Parabolic Equations
Specific: Bloch Wave Method in Homogenization,
Spectral Theory of Periodic Elliptic Operators,
Almost Periodic Homogenization, Approximation of Homogenized Tensor,
Regularity Theory

WORK EXPERIENCE

Postdoctoral Fellow *October 2020 - Present*
TIFR Centre for Applicable Mathematics
Bangalore 560065

Research Associate, Department of Mathematics *November 2019 - May 2020*
Indian Institute of Technology Bombay, Mumbai
India 400076

EDUCATION

Ph.D. in Mathematics *Thesis Defended on 18/02/2020* *2011-2020*
Thesis Title: "Generic Simplicity of Spectral Edges and Bloch Wave Homogenization of Almost Periodic Media"

Since 2014	Indian Institute of Technology Bombay, CPI 9.5 *Advisor* Prof. Sivaji Ganesh Sista
2011-2014	Indian Institute of Technology Kanpur *Advisors* Profs. Nandini Nilakantan & Sivaji Ganesh Sista

M.Sc., Mathematics *2009-2011*
Indian Institute of Technology Kharagpur, CGPA 8.68
Project Title: Bounds on Zeros of Polynomials
Project Advisor: Prof. V.K. Jain

B.Sc. Mathematics *2006-2009*
St. Xavier's College, Mumbai,
Affiliated to University of Mumbai
Overall Percentage 83.4%

FULL LIST OF PUBLICATIONS

Preprints

1. Abhishek Ghosh & Vivek Tewary, Pointwise and weighted Hessian estimates for Kolmogorov–Fokker–Planck type operators, 2022, arxiv:2205.15069
2. Karthik Adimurthi, Harsh Prasad & Vivek Tewary, Local Hölder regularity for nonlocal parabolic p-Laplace equations, 2022, arxiv:2205.09695
3. Karthik Adimurthi, Harsh Prasad & Vivek Tewary, Hölder regularity for fractional p-Laplace equations, 2022, arxiv:2203.13082
4. Suchandan Ghosh, Dharmendra Kumar, Harsh Prasad & Vivek Tewary, Existence of variational solutions to doubly nonlinear nonlocal evolution equations via minimizing movements, 2021, arXiv:2201.00634
5. Harsh Prasad & Vivek Tewary, Local boundedness of variational solutions to nonlocal double phase parabolic equations, 2021, arXiv:2112.02345
6. Harsh Prasad & Vivek Tewary, Existence of variational solutions to nonlocal evolution equations via convex minimization, 2021, arXiv:2112.00402
7. Karthik Adimurthi, Suchandan Ghosh & Vivek Tewary, Optimal $C^{1,\alpha}$ regularity for quasilinear parabolic equations with non-standard growth, submitted, 2021

Accepted & Published Papers

1. Karthik Adimurthi & Vivek Tewary, Borderline Lipschitz regularity for bounded minimizers of functionals with (p, q) growth, 2022, accepted for publication in *Forum Mathematicum*. preprint at arxiv:2203.03482.
2. Sivaji Ganesh Sista & Vivek Tewary, Bloch wave approach to almost periodic homogenization and approximation of effective coefficients, *Discrete and Continuous Dynamical Systems Series B*, vol. 27, no. 4, April 2022, pp. 1989-2024. preprint at arXiv:1908.07977.
3. Sivaji Ganesh Sista & Vivek Tewary, Bloch wave homogenization of quasiperiodic media, *Euro. Jnl. of Applied Mathematics*, vol. 33, no. 1, February 2022, pp. 58-78. preprint at arXiv:1910.12724
4. Vivek Tewary, Combined effects of homogenization and singular perturbations : A Bloch wave approach, *Networks and Heterogeneous Media*, vol. 16, no. 3, pp. 427-458, September 2021. preprint at arXiv:2011.11137.
5. Sivaji Ganesh Sista & Vivek Tewary, Generic simplicity of spectral edges and applications to homogenization, *Asymptotic Analysis*, vol. 116, no. 3-4, pp. 219-248, 2020, preprint at arXiv:1807.00917
6. Vinay Kumar Jain & Vivek Tewary, A refinement of Cauchy's bound for the moduli of zeros of a polynomial, *Bull. Math. Soc. Sci. Math. Roumanie (N.S.)* 61(109) (2018), no. 2, 173–185.

AWARDS & FELLOWSHIP GRANTS

- Received Prof. Prabhu Lal Bhatnagar Memorial Prize, Department of Mathematics, IIT Bombay for the year 2020. The award recognizes the strength of the PhD thesis in the areas of Fluid Mechanics and Applied Mathematics.
- Qualified for CSIR-NET JRF Fellowship (NET), India, December 2013.
- Qualified for National Board of Higher Mathematics Research Fellowship, India, May 2012.
- Qualified for UGC-NET JRF Fellowship (NET), India, December 2010.

TALKS AND SEMINARS

2022

- *Invited Talk.* **13 July 2022:** I presented a talk on "Regularity theory for parabolic fractional p-Laplace equations" on 13th July 2022 in an online mathematics colloquium at *Departamento de Matemática, Facultad de Ciencias Físicas y Matemáticas, University of Concepción, Chile.*
- *Invited Talk.* **07 June 2022:** Presented a talk titled *"Regularity theory for parabolic fractional p-Laplace equations"* at *Chennai Mathematical Institute.*

2021

- *Invited Talk.* **27 July 2021:** Presented a talk titled *"Generic simplicity for spectral edges with applications to homogenization theory"* at *Workshop on Perturbation of Spectral Bands and Gaps.* Fakultät für Mathematik, Technische Universität Dortmund.
- *Contributed Talk.* **16 February 2021:** Presented an online talk titled *"Bloch wave homogenization of quasiperiodic media"* at *Discussion Meeting on Multi-scale Analysis: Thematic Lectures and Meeting (MATHLEC-2021) (ONLINE).* International Centre for Theoretical Sciences, TIFR, Bengaluru.

2020

- *Invited Talk.* **23 February 2020:** Presented a talk titled *"Bloch Wave Homogenization of Quasiperiodic Media"* at *Conference on Differential Equations, Control & Homogenization.* Indian Institute of Technology Bombay.
- *Invited Seminar.* **20 February 2020:** Presented a seminar titled *"Bloch Wave Approach to Almost Periodic Homogenization"* at TIFR Centre for Applicable Mathematics, Bengaluru.

2019

- *Contributed Talk.* **6 September 2019:** Presented a talk titled *"Simplicity of Spectral Edges and Applications to Homogenization"* at *Discussion Meeting on Multi-scale Analysis and Theory of Homogenization.* International Centre for Theoretical Sciences, TIFR, Bengaluru.
- *Contributed Talk.* **5 January 2019** Presented a talk titled *"Simplicity of Spectral Edges and Applications to Homogenization"* at the Diamond Jubilee Symposium, Department of Mathematics, Indian Institute of Technology Bombay.

2018

- *Contributed Talk.* **8 July 2018:** Presented a talk titled *"Perturbation Theory of Bloch Eigenvalues and Applications to Homogenization"* at the 12^{th} AIMS Conference on Dynamical Systems, Differential Equations and Applications in Taipei, Taiwan, organized by the National Center for Theoretical Sciences (NCTS), Taiwan and the American Institute of Mathematical Sciences (AIMS).

PROFESSIONAL SERVICE

Review Activity

- Reviewer for zbMATH (formerly Zentralblatt MATH) since 2021.
- Review work for *Mathematica Bohemica.*
- *Review work for Proceedings : Mathematical Sciences.*

Organizational Activity

Member, Organizing Committee, Diamond Jubilee Symposium *4-6 January 2019*
Department of Mathematics, Indian Institute of Technology Bombay.

Departmental Duties

- **2016-2019:** *System Administrator*: Responsible for maintaining the Departmental Website and the M.Sc. Laboratory, Department of Mathematics, IIT Bombay.
- **2016-2019** *Member*, Webpage Committee & Computer Lab Committee, Department of Mathematics, IIT Bombay.

ATTENDED CONFERENCES, SCHOOLS AND WORKSHOPS

2021

- Speaker and Participant, *Workshop on Perturbation of Spectral Bands and Gaps.* Fakultät für Mathematik, Technische Universität Dortmund. *26-30 July '21*
- Speaker and Participant, *Discussion Meeting on Multi-scale Analysis: Thematic Lectures and Meeting* (MATHLEC 2021) (ONLINE). International Centre for Theoretical Sciences, TIFR, Bengaluru. *15-19 February '21*

2020

- Speaker and Participant, *Conference on Differential Equations, Control & Homogenization.* Department of Mathematics, Indian Institute of Technology Bombay. *21-23 Feb '20*

2019

- Speaker and Participant, *Discussion Meeting on Multi-scale Analysis and Theory of Homogenization.* International Centre for Theoretical Sciences, TIFR, Bengaluru. *26 Aug- 6 Sep '19*
- Speaker, Participant, and Organizer, *Diamond Jubilee Symposium*, Department of Mathematics, Indian Institute of Technology Bombay. *4-6 Jan '19*

2018

- Speaker, Participant, and Chaired a session titled *"PDEs and Applications"* at the 12^{th} AIMS Conference on Dynamical Systems, Differential Equations and Applications in Taipei, Taiwan, organized by the National Center for Theoretical Sciences (NCTS), Taiwan and the American Institute of Mathematical Sciences (AIMS). 8 July 2018

2016

- Participant, *Advanced Workshop on Homogenization and Control: Theory & Application, National Programme on Differential Equations (NPDE-TCA).* Indian Institute of Technology Kanpur. *Feb-March 2016*

2015

- Participant, *Advanced Level Workshop on Controllability Of Heat And Wave Equations, National Programme on Differential Equations (NPDE-TCA).* Indian Institute of Technology Mandi. *November 2015*
- Participant, *Advanced School and Workshop on Control and Numerics for Fluid-Structure Interaction Problems.* TIFR Centre for Applicable Mathematics, Bengaluru. *June-July 2015*

2013

- Participant, *Advanced Workshop on Homogenization, National Programme on Differential Equations (NPDE-TCA).* Indian Institute of Space Science and Technology, Thiruvananthapuram. *December 2013*
- Participant, *Advanced Level Training Programme, National Programme on Differential Equations (NPDE-TCA)*, Department of Mathematics, Indian Institute of Science Bangalore. *June-July 2013*
- *Summer Internship, National Programme on Differential Equations (NPDE-TCA)*, Indian Institute of Technology Bombay. *Advisor* Prof. Sivaji Ganesh Sista. *May-June 2013*

2012

- Participant, *Winternship, National Programme on Differential Equations (NPDE-TCA).* Indian Institute of Technology Bombay. *Advisor* Prof. Sivaji Ganesh Sista. *December 2012*
- Participant, *Advanced Training in Mathematics Workshop in Riemannian Geometry.* TIFR Centre for Applicable Mathematics, Bengaluru. *July 2012*
- Participant, *Advanced Training in Mathematics Workshop in Harmonic Analysis.* Indian Institute of Technology Kanpur. *January 2012*

2008

- Participant, *Mathematics Training and Talent Scheme* - Level O - Mysore. Organized by National Board of Higher Mathematics. *May - June 2008*
- Summer Student, *Summer Student Programme in Physics.* Institute of Mathematical Sciences, Chennai. Nonlinear Dynamics: Coupled Map Lattices under Prof. Sudeshna Sinha. *April - May 2008*

TEACHING DUTIES

Teaching duties included teaching tutorial and problem classes, conducting and marking quizzes and examinations.

Autumn 2015: Teaching Assistant, *MA 205* Complex Analysis (IIT Bombay).

Spring 2017: Teaching Assistant, *MA 108* Differential Equations (IIT Goa).

Spring 2018: Teaching Assistant, *MA 106* Linear Algebra (IIT Dharwad).

Spring 2018: Teaching Assistant, *MA 108* Differential Equations (IIT Dharwad).

9 Dec- 28 Dec '19: Tutor, *Advanced Instructional School on Geometric Analysis.* Indian Institute of Technology Bombay, Mumbai, India. *Conveners* Profs. Bata Krishna Das, Mayukh Mukherjee.

July-October '21: Teaching assistant, *NPTEL course on Partial Differential Equations.* hosted on Swayam Portal. *Instructor* Prof. S. Sivaji Ganesh.

REFERENCES

Prof. Sivaji Ganesh Sista
Department of Mathematics
IIT Bombay
siva@math.iitb.ac.in
Phone +91 22 2576 7476

Prof. Karthik Adimurthi
TIFR Centre for Applicable Mathematics
Bangalore
kadimurthi@tifrbng.res.in
Phone +91 80 6695 3725

Prof. Agnid Banerjee *agnid@tifrbng.res.in*
TIFR Centre for Applicable Mathematics Phone +91 80 6695-3724
Bangalore

Prof. Muthusamy Vanninathan *muthu.vanni@gmail.com*
Department of Mathematics
IIT Bombay

Prof. Harsha Hutridurga *hutri@math.iitb.ac.in*
Department of Mathematics Phone +91 22 2576 9474
IIT Bombay

GENERAL SKILLS

Languages	Hindi and English
Programming	C, LaTeX, Matlab

Bengaluru, July 16, 2022