

# M.V.Ajay Kumar Nair

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## Education

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| 2019-     | <b>PhD student in Mathematics</b><br><i>Indian Institute of Science Bangalore</i><br>Advisors: Prof. Subhojoy Gupta and Prof. Siddhartha Gadgil |
| 2013-2018 | <b>BS-MS with Major in Mathematics</b><br><i>Indian Institute of Science Education and Research Bhopal</i><br>CPI : 8.16/10.0                   |

## Professional Experience

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| Nov 2024 -    | <b>Research Intern</b><br><i>ARC-Net</i><br><br>As a research intern, I am working on Autoformalisation i.e., automatically translating natural language proofs into Lean Theorem Prover. I was involved in testing the LeanAide software and suggesting improvements to the features. |
| Jun 2023      | <b>Tutor, Lie Groups</b><br><i>Advanced Instructional School(AIS)- Lie Groups and Lie Algebras</i><br><br>As a Tutor for this AIS, I was responsible for helping the students with the problem sheets.   |
| Dec 2021      | <b>Tutor, Real Analysis</b><br><i>Winter School for Young Women in Mathematics</i><br><br>As a Tutor for Real Analysis, I was responsible for holding problem-solving sessions and clearing doubts in the content covered.   |
| 2022-23 Sem-I | <b>Teaching Assistant (UM 201)</b><br><i>Department of Mathematics, IISc Bangalore</i><br><br>As a TA for UM 201 (Probability and Statistics), I was responsible for tutorials and grading exams and quizzes.  |
| 2021-22 Sem-I | <b>Teaching Assistant (MA 200)</b><br><i>Department of Mathematics, IISc Bangalore</i>   |

	As a TA for MA 200 (Multivariable Calculus), I was responsible for tutorials and grading assignments and exams.
2020-21 Sem-I	<b>Teaching Assistant (MA 261)</b> <i>Department of Mathematics, IISc Bangalore</i> As a TA for UM 201 (Probability Models), I was responsible for tutorials and grading exams and quizzes.
Summer 2017 Summer 2016	<b>Content Development Intern</b> <i>Centre for Research in Advanced Technology for Education in Science (CREATES)</i>
Sep-Nov 2018	During this Internship, I developed quizzes and educational content in Mathematics of undergraduate level.
2020-21 Sem-I	<b>Teaching Assistant (HSS)</b> <i>Department of Humanities and Social Sciences, IISER Bhopal</i> As a Teaching assistant for HSS 101 (English for Communication), I helped the instructor in grading.

## Fellowships

2019-2024	<b>NBHM PhD Fellowship</b> <i>Department of Atomic Energy, India.</i>
2013-2018	<b>INSPIRE Fellowship</b> <i>Department of Science and Technology, India.</i>
Summer 2015	<b>Summer Research Fellow</b> <i>Indian Academy of Sciences.</i>

## Publications

2024	On dynamics of the Mapping class group action on relative $\mathrm{PSL}(2, \mathbb{R})$ -Character Varieties (preprint)
2024	The Goldman bracket characterizes homeomorphisms between non-compact surfaces (with Siddhartha Gadgil and Sumanta Das), to appear in <i>Algebraic and Geometric Topology</i>
2023	Factoring periodic maps into Dehn twists (with K. Rajeevsarathy and N. K. Dhanwani), <i>Journal of Pure and Applied Algebra</i> , 227(1).

## Activities

2022-	Co-Organiser, Students' Topology Geometry Seminars, Department of Mathematics, IISc.
2021-23	Co-Organiser, Prime Time Seminars, Student Seminars in Department of Mathematics, IISc.
2017	Student Volunteer, Regional Workshop on Research and Opportunities, Indian Women in Mathematics(IWM).
2016-2017	Member, Central Advisory Committee of Student Activity Council(SAC) at IISER Bhopal.
Nov 2016	Student Volunteer, Indian Academy of Sciences 82 <sup>nd</sup> Annual meeting at IISER Bhopal.
Apr 2016	Member, Organizing Committee of Luminaire'16, Movie Festival at IISER Bhopal.
Oct 2015	Organiser, Arts and Letters'15, Literary festival at IISER Bhopal.
Jan 2015	Member, Core Organizing Committee of Singularity'15, Science Festival at IISER Bhopal.
2014-2015	Member of Prayaas, A Social initiative Club in IISER Bhopal
2014-2015	Vice-Secretary, Fine Arts and Literary Council, SAC at IISER Bhopal.
2014-2015	Co-ordinator, Movie Club at IISER Bhopal.

## Conferences Attended

July 2024	Geometry in Groups, ICTS Bengaluru.
May 2023	1,2,3: Curves, Surfaces and 3-manifolds, Technion Israel Institute of Technology, Haifa, Israel.
Dec 2022	Ergodic Theory and Dynamical Systems, ICTS Bengaluru.
July 2019	Advanced Instructional School in Riemannian Geometry, NCM at IISc Bangalore.
Oct 2017	Regional Workshop on Research and Opportunities, Indian Women in Mathematics (IWM) at IISER Bhopal.
Jan 2015	Indian Science Congress at University of Mumbai.

## Specialised Skills

Programming Languages	Python, Mathematica, Haskell (Beginner), Lean (Beginner)
Libraries and Tools	pandas, NumPy, scikit-learn, TensorFlow, Keras, seaborn, matplotlib

## Languages

English	fluent (speaking, reading, writing)
Telugu	fluent (speaking, reading, writing)
Hindi	fluent (speaking, reading, writing)
Malayalam	intermediate (reading, writing), fluent (speaking)

## References

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