

Dr. Ashok Kumar

Curriculum Vitae

Department of Mathematics
Harcourt Butler Technical University, Kanpur, India
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Research Profile:

Postdoctoral Fellow in Mathematics specializing in Differential and Finsler Geometry. My research interests include Finsler manifolds, Kropina spaces, Funk geometry, minimal submanifolds, curvature properties, and geometric analysis.

Education

2018–2024 : **Ph.D. in Mathematics**, Banaras Hindu University (BHU), Varanasi, India.

Thesis: **A Study on Minimal Submanifolds and Funk Structure in Finsler Geometry.**

Advisors: Prof. B. Tiwari, BHU and Prof. H. M. Shah, HRI.

2014–2016 : **Master of Science in Mathematics**, C. S. J. M. University, Kanpur, Uttar Pradesh, India.

2010–2014 : **Bachelor of Science (PCM group)**, C. S. J. M. University, Kanpur, Uttar Pradesh, India.

Publications

Journal Articles

- 2024 **Kumar, Ashok**, Hemangi Madhusudan Shah, and Banktेशwar Tiwari. Isometric models of the funk disc and the Busemann function. *Results Math.*, volume 79, pages Paper No. 77, 31, 2024.
- 2024 **Kumar, Ashok**, Hemangi Madhusudan Shah, and Banktेशwar Tiwari. The Funk-Finsler structure on the unit disc in the hyperbolic plane. *Mediterr. J. Math.*, volume 21, pages Paper No. 160, 22, 2024.
- 2022 Ranadip Gangopadhyay, **Kumar, Ashok**, and Banktेशwar Tiwari. On minimal surfaces immersed in three dimensional Kropina Minkowski space. *Results Math.*, volume 77, pages Paper No. 27, 14, 2022.
- 2022 Ranadip Gangopadhyay, **Kumar, Ashok**, Hemangi Madhusudan Shah, and Banktेशwar Tiwari. On minimal surfaces of rotations immersed in deformed hyperbolic Kropina space. *Results Math.*, volume 77, pages Paper No. 202, 18, 2022.

Preprints and Manuscripts Under Review

- 2026 **Sharma Kumar Indresh, Kumar Ashok, Tiwari Banktेशwar**, Sobolev space on the unit disc equipped with generalized Apollonian-Finsler metric.
- 2026 **Panday Alok Kumar, Kumar Ashok, Tiwari Banktेशwar**, On the Finsler structure of Apollonian weak metric in unit disc, arXiv:2509.18621v1.
- 2025 **Kumar Ashok, Shah Hemangi Madhusudan, Tiwari Banktेशwar**, The Funk-Finsler structure in the constant curvature spaces, arXiv:2502.16149v1.

Under Preparation

Kumar Ashok, Shah Hemangi Madhusudan, Tiwari Banktेशwar, Randers forward harmonic manifolds in the Finslerian settings.

Academic & Research Experience

Harcourt Butler Technical University, Kanpur, India

Aug 11, 2026 **Assistant professor**, (*Contractual*).
– present Department of Mathematics, HBTU.

Harish Chandra Research Institute, Prayagraj, India

Oct 30, 2024 **Postdoctoral Fellow**.
– Aug 10, 2026 Department of Mathematics, HRI.

Indian Institute of Technology, Hyderabad, India

Feb 12, 2024 – **Research Associate**.
Aug 11, 2024 Department of Mathematics, IIT H.
Advisor : **Dr. Dhriti Sundar Patra**

Fellowships & Awards

June & Dec 2017 **CSIR-UGC, NET, and JRF, in Mathematical Sciences**

Talks and Conference Presentations

- 2025 Delivered a talk entitled “**The Funk–Finsler structure on the unit disc in the hyperbolic Klein model**”, in the **PhD-Postdoc Math Meet**, organized by Harish-Chandra Research Institute, Prayagraj, during May 03-04, 2025.
- 2023 Presented a paper entitled “**On minimal surfaces of rotations immersed in deformed hyperbolic Kropina space**”, in the **International Conference on Differential Geometry and Relativity** organized by Department of Mathematics SSJ University Almora, Department of Applied Sciences BTKIT Dwarahat and The Tensor Society, during May 18 -20, 2023.
- 2022 Presented a paper entitled “**On minimal surfaces immersed in three dimensional Kropina Minkowski space**”, in the **National Conference of Academy for Progress of Mathematics on Recent Advances in Mathematical Analysis and Applications** organized by DST-Centre for Interdisciplinary Mathematical Sciences (CIMS), Institute of Science, Banaras Hindu University, Varanasi, during May 07 - 08, 2022.

Workshops & Schools Attended

- 2026 Attended the 2nd **DAE Conclave**, organized by TIFR Mumbai, from January 14–18, 2026.
- 2025 Program on *New Trends in Teichmüller Theory*, ICTS–TIFR, Bengaluru, India, February 24–March 7, 2025.
- 2022 International **CIMPA School on Geometric Structures on Surfaces**, Moduli Spaces and Dynamics, DST-Centre for Interdisciplinary Mathematical Sciences (CIMS), Institute of Science, Banaras Hindu University, Varanasi, India, December 12–22, 2022.
- 2022 Workshop on *Zero Mean Curvature Surface in the Lorentz–Minkowski Space and Related Areas*, Department of Mathematics, School of Natural Sciences, Shiv Nadar Institution of Eminence, India, September 30–October 3, 2022.
- 2021 One-Week Workshop on *Scientific Writing in LaTeX and Other Open-Source Software (SageMath)*, DST-Centre for Interdisciplinary Mathematical Sciences (CIMS), Institute of Science, Banaras Hindu University, Varanasi, India, November 8–13, 2021.
- 2019 **CIMPA School on Finsler Geometry and Applications**, DST-Centre for Interdisciplinary Mathematical Sciences (CIMS), Institute of Science, Banaras Hindu University, Varanasi, India, December 5–15, 2019.

2019 *Annual Foundation School-I*, Harish-Chandra Research Institute, Prayagraj, India, May 6–June 1, 2019.

Computer Skills

Programming Python, MATLAB, R, C, C++, Java

Mathematical $\text{\LaTeX}$, SageMath
Software

Teaching Assistantship

15 June–4 July, 2026: **The Summer Programme in Mathematics**, HRI, Prayagraj.

19 May–14 June, 2025 : **The Annual Foundation School II**, organized by the Central University of Punjab.

Fall, 2025 : **HRI-MM-612-C: General topology fundamentals**, HRI, Prayagraj.

Teaching Interests

Ordinary Differential Equations, Partial Differential Equations, Operations Research, Graph Theory, Numerical Analysis, Linear Algebra, Abstract Algebra, Real Analysis, Complex Analysis, Functional Analysis, Curves, Surfaces and Manifolds..

Research Interests

Riemannian-Finsler Geometry, Riemannian Geometry, Differential Geometry..

Referees

Dr. Banktेशwar Tiwari

*Professor, Department of
DST-CIMS*

Banaras Hindu University,
Varanasi-221005, India.

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Dr. Hemangi M. Shah

*Associate Professor, Department of
Mathematics*

Harish-Chandra Research Institute (HRI)

✉ hemangimshah@hri.res.in

Dr. Dhriti Sundar Patra

*Assistant Professor, Department of
Mathematics*

Indian Institute of Technology Hyderabad, India

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