

ISHAN MATA

Research Interests

- Differential Cohomology
- Mathematical Physics

Employment

- 01st Aug 2023 - 31st Jul 2026 **Visiting Fellow (NBHM postdoc)**, *Theoretical Statistics and Mathematics Unit*, Indian Statistical Institute (Delhi Center)
- 27th Oct 2021 - 31st Jul 2023 **Research Associate**, *Theoretical Statistics and Mathematics Unit*, Indian Statistical Institute (Delhi Center)

Education

- August 2015 - August 2021 **Ph.D.**, *Physics Department, Birla Institute of Technology & Science-Pilani*, Pilani, Thesis title: Studies in Differential Cohomology (Thesis submitted on 18th May 2021, defended on 23rd August 2021)
- August 2010 - July 2013 **M.Phil.**, *Department of Theoretical Physics, Tata Institute of Fundamental Research*, Mumbai
- August 2005 - May 2010 **M.Sc.(Hons.) Mathematics and M.Sc.(Hons.) Physics**, *Dual Degree Programme, Birla Institute of Technology and Science, Pilani*, Pilani

Publications/Preprints

- Ayush Khaitan, Ishan Mata, Bhargav Narayanan, *Elementary symmetric polynomials under the fixed point measure* arXiv:2505.12178
- Ishan Mata, *Uniqueness of differential characters and differential K-theory via homological algebra* J. Homotopy Relat. Struct. 16, 225–243 (2021)
- Ishan Mata, *Invariants of families of flat connections using fiber integration of differential characters* Lett. Math. Phys. 110, 639–657 (2020)
- Ishan Mata, Suvrat Raju, Sandip P. Trivedi, *CMB from CFT*, JHEP 1307, 15-61 (2013)

Schools and Conferences attended

- Workshop on ‘Global Homotopy Theory’, held at IIT Bombay, Feb. 2020
- Advanced Instructional School on ‘Homotopy theory’, held at ISI Kolkata, May 2019
- Advanced Instructional School on ‘Algebraic Curves and Riemann Surfaces’, held at IISER Pune, June 2013

- ICTS School on 'Cosmology and Gravitational Waves', held at IUCAA Pune, December 2011

Teaching experience

- Was Teaching Assistant for the course 'Mathematics-I' at the Indian Statistical Institute (Delhi Center) during Aug–Dec 2025
- Gave a set of talks on de Rham theory at the Indian Statistical Institute (Delhi Center) between March 2022 – June 2022.
- Was a tutor for 'Physics Laboratory' course at BITS Pilani for four semesters in the years 2016-2019.
- Was a tutor for Classical Mechanics and Statistical Mechanics courses at TIFR Mumbai in 2011 and 2012.

Other Academic Information

- Secured 1st rank in the CSIR-UGC-National Eligibility Test (NET) conducted in December 2014 in the subject 'Physical Sciences'.
- Secured 1st rank in the CSIR-UGC-National Eligibility Test (NET) conducted in December 2012 in the subject 'Mathematical Sciences'.
- Was selected for the award of 'National Board for Higher Mathematics Ph.D. Scholarship' in June 2013.
- Secured 1st rank at the national level in the GATE-2013 examination in Mathematics.
- Secured 1st rank at the national level in the GATE-2010 examination in Physics.
- Secured 1st rank in the Joint Entrance Screening Test (JEST) in Physics in 2010.
- Was adjudged the 'Best Academic Performer' of the 'Batch of 2005' by the Mathematics Association BITS, Pilani.
- Was awarded the 'National Board for Higher Mathematics M.A./M.Sc. Scholarship' for the years 2008-09 and 2009-10.