



NILAVA METYA

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EDUCATION

Rutgers, the State University of New Jersey - New Brunswick

Sep '22 – (expected) '27

Doctor of Philosophy in Mathematics | CGPA: 4.0/4.0

Master of Science in Mathematics | CGPA: 4.0/4.0 | **2022 - '24**

Piscataway, New Jersey, USA

(passed written qualifying exams in first attempt just before program started)

Chennai Mathematical Institute

Aug '19 – May '22

Bachelor of Science (Honours) in Mathematics and Computer Science | CGPA: 9.72/10

Position: **Third** (out of 55 students)

Chennai, Tamil Nadu, India

(completed degree requirements in 2.5 years)

Don Bosco School, Liluah

Apr '06 – Mar '19

Indian School Certificate (ISC) 2019 | **Percentage:** 97.25%

Position: **First** in science stream (~ 55 students), **second** overall (~ 180 students)

Indian Certificate of Secondary Education (ICSE) 2017 | **Percentage:** 96.6%

Howrah, West Bengal, India

Position: **First** in school (~ 180 students)

RELEVANT COURSEWORK

- Matrix Computations
- Discrete Mathematics
- Sheaves and Schemes^{Princeton}
- Differential Equations
- Automata Theory
- Probability^{Rutgers}
- Haskell, Python
- Lambda Calculus
- Data Mining^{Rutgers}
- Object Oriented Programming
- Newtonian, Lagrangian,
- Convex Optimization^{Princeton}
- Algorithm Design + Analysis
- Hamiltonian mechanics
- ML Theory^{Rutgers}

PUBLICATIONS/PREPRINTS

1. G DePaul, S Hoşten, N Metya, I Nometa. Degrees of the Wasserstein distance to small toric models.
Journal of Algebraic Statistics

PROJECTS/EXPERIENCE

Distributionally Robust optimization over dynamical systems | *with A Sinha*

current

Distributionally Robust Games | *with B Gangwani and A Sinha*

current

Protein symmetry prediction | *Data Science Bootcamp at the Erdős Institute*

Feb - Apr '23

Wasserstein distances to toric models | *with G DePaul, S Hoşten, I Nometa*

July '23 - Feb '24

Inference on growth process of a network | *Data Mining course at Rutgers*

Sep - Dec '23

Principal Components along Quiver representations | *Computational Topology course at Rutgers*

Sep - Dec '23

SELECTION/ATTENDANCE IN CONFERENCES/WORKSHOPS

Princeton Machine Learning Theory Summer School | *Summer School* | Princeton

Aug '24

Equilibrium Summer School | *Summer School* | Rutgers University, NB

July '24

Frontiers in Complexity Theory: A Graduate Workshop | *Workshop* | DIMACS, Rutgers, NB

July '24

Efficient Algorithms for High Dimensional Metrics | *Workshop* | DIMACS, Rutgers, NB

May '24

Bayesian Statistics and Statistical Learning | *Workshop* | IMSI, Chicago

Dec '23

Algebraic Statistics for Ecological and Biological Systems | *Workshop* | IMSI, Chicago

Oct '23

Invitation to Algebraic Statistics and Applications | *Workshop* | IMSI, Chicago

Sep '23

Permutation and Causal Inference: Connections and Applications | *Workshop* | IMSI, Chicago

Aug '23

Algebraic Methods in Biochemical Reaction Networks | *Workshop* | MPI, Leipzig

Jun '23

RELEVANT TALKS DELIVERED

Principal Components along Quiver representations	1 talk Rutgers course: <i>Computational Topology</i>	Dec '23
Inference on growth process of a network	1 talk Rutgers course: <i>Data Mining</i>	Dec '23
Complexity of Optimization	1 talk Rutgers <i>Pizza Seminar</i>	Oct '23
Complexity of Computing Wasserstein Distance	1 talk <i>Apprenticeship Week</i> at IMSI, Chicago	Oct '23
Kneser graph coloring	1 talk Rutgers <i>Graduate Combinatorics Seminar</i>	Oct '22
Fiedler vector method	1 talk CMI course: <i>Matrix Computations</i>	May '22
Markov Chain Monte Carlo	1 talk Internship with Prof Ramamoorthi	Sep '21

HONOURS AND AWARDS

Nominated by Rutgers Math department for SLMath summer school	Jun '23
<i>Summer school at Leipzig - awarded full travel funding. Only two students from Rutgers Math were fully funded by SLMath.</i>	
Academic Excellence Award at Rutgers	Sep '22
<i>Received a certificate and \$100 based on performance in Written Qualifying Exams.</i>	
Shriram Scholarship at CMI	'19 – '22
<i>Received institutional fee waiver and monthly stipend (based on entrance exam).</i>	
Ranked 4th nationally at the Bachelor of Statistics (B.Stat.) entrance examination	'19
<i>Indian Statistical Institute (ISI)</i>	
Informatics Olympiad	'17, '18, '19
<i>Selected among (approx) top 100-130 school students in India in Zonal Informatics Olympiad (ZIO).</i>	
Mathematical Olympiad	Jan '18
<i>Selected for Indian National Mathematical Olympiad (INMO) Training Camp top 30 school students in West Bengal.</i>	
Program in Mathematics for Young Scientists (PROMYS)	'18, '19, '20, '21
<i>Awarded the Tara and Jasubhai Mehta Fellowship to PROMYS (among 5 Indian school students in 2018) based on a competitive process. Participated twice as a student ('18, '19) and twice as a counselor ('20, '21).</i>	
Others	
<ul style="list-style-type: none">• Qualified for International Collegiate Programming Contest (ICPC) Kharagpur regionals and Amritapuri regionals in 2019 and secured rank 35 among (approx) 90 university teams at Kharagpur.• Selected among top 30 students in India to participate in Scholastic Test of Excellence in Mathematical Sciences (STEMS) camp at CMI in 2018, based on a competitive exam (across grades 9 – 12 and across Math, Physics, Computer Science).• Secured the third position in Mathematics Talent Reward Programme (MTRP) 2016, organized by ISI Kolkata, based on a competitive exam and quizzes at a camp.	

SELECTED TEACHING/GRADING EXPERIENCE

Head Counselor at PROMYS India IISc Bangalore	May – Jun '23
Grader Rutgers University	Sep '22 – May '24
Teaching Assistant Chennai Mathematical Institute	Dec '20 – May '22
Faculty at Ramanujan School of Mathematics Kolkata	May '19 – July '22
<i>Taught high-school students competitive math for math olympiad, CMI, ISI entrance exams</i>	

SKILLS

Research	Optimization and AI/ML in game theory, especially distributionally robust optimization
Soft-skills	“Can learn it” attitude, Active team-worker, collaborative problem solver,
Languages	Bengali (mother tongue), English (fluent), Hindi (fluent)
Programming	Python, C++, R, Haskell, MATLAB, JAVA, HTML, SageMath, Macaulay2
Documentation	L ^A T _E X, Microsoft Word