

NILAVA METYA

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EDUCATION

Rutgers, The State University of New Jersey - New Brunswick <i>Doctor of Philosophy in Mathematics</i> (passed through written qualifying exams in first attempt just before program started)	September '22 – (expected) '27 New Brunswick, New Jersey, USA
Chennai Mathematical Institute <i>Bachelor of Science (Honours) in Mathematics and Computer Science CGPA: 9.72/10</i> Position: <i>Third</i> (out of 55 students)	August '19 – (expected) April '22 Chennai, Tamil Nadu, India
Don Bosco School, Liluah <i>Indian School Certificate (ISC) 2019 Percentage: 97.25%</i> Position: <i>First</i> in science stream (~ 55 students), <i>second</i> overall (~ 180 students) <i>Indian Certificate of Secondary Education (ICSE) 2017 Percentage: 96.6%</i> Position: <i>First</i> in school (~ 180 students)	April '06 – March '19 Howrah, West Bengal, India

GRADUATE COURSEWORK

Mathematics

- Quantum computation, Matrix Computations, Representations of algebras and quivers, Algebraic Number Theory, Representation theory (reading + research), Algebraic Geometry 2, Homological Algebra
- Complex Analysis, Measure theory and functional analysis
- Probability Theory, Statistics with R
- Differential Equations, Smooth Manifolds, Algebraic Topology

Computer Science

- Functional Programming (Haskell), Advanced Programming (Python), Object Oriented Programming
- Design and Analysis of Algorithms, Discrete Mathematics, Theory of Computation, Lambda Calculus
- Formal Security Analysis (applied pi calculus, ProVerif, CryptoVerif, F*)

RELEVANT READING PROJECTS

Quiver representations and invariants <i>Prof Anne-Marie Aubert</i> Sorbonne University <i>Read a paper on quivers by Daniele Faenzi, and learnt relevant topics</i>	June '22
Markov Chain and Monte Carlo <i>Prof R V Ramamoorthi</i> <i>A paper on MCMC by KB Athreya, M Delampady, T Krishnan from Resonance, Volume 8, 2003</i>	August - September '21
p-adic analysis <i>Prof Anup Dixit</i> IMSc, Chennai <i>Neal Koblitz's book 'p-adic Numbers, p-adic Analysis, and Zeta-Functions' and the paper 'The Derivative of p-adic Dirichlet Series at $s = 0$' by H M Stark</i>	May - July '21
Representation theory of Lie algebras <i>Prof Apoorva Khare</i> IISc, Bangalore <i>James E Humphreys's book 'Introduction to Lie Algebras and Representation Theory' (till section 7)</i>	May - July '21

TALKS DELIVERED

Burnside $p^a q^b$ theorem 1 talk Rutgers Graduate Number Theory Learning Seminar	November '22
Very basic Lie Theory 1 talk Rutgers Graduate Geometry and Topology Learning Seminar	October '22
Knaser graph coloring 1 talk Rutgers Graduate Combinatorics Seminar	October '22
Well definedness of Brauer group 1 talk Rutgers Algebra 'N' GEometry Learning Seminar	September '22
Fiedler vector method 1 talk Project in a course on matrix computations	May '22
Derivative of p-adic Dirichlet series at $s = 0$ (Stark) 1 talk Internship with Prof Dixit	November '21
Dehn's proof of Hilbert's 3rd problem 1 talk CMI Student Seminar	November '21
Markov Chain Monte Carlo 1 talk Internship with Prof Ramamoorthi	September '21
Lie Algebras and Representation Theory 3 talks Counselor Seminar at PROMYS	July - August '21
Introduction to Hyperbolic Geometry 1 talk Counselor Seminar at PROMYS	July '21
Introduction to Quantum Computing 4 talk Counselor Seminar at PROMYS	July - August '20

TEACHING AND GRADING

Grader | Rutgers University

Topology

Sep–Dec '22

Theory of Numbers

Sep–Dec '22

Teaching Assistant | Chennai Mathematical Institute

Algebra II (Group theory)

BSc 1st year

Prof Manoj Kummini

Jan–May '22

Algebra I (Linear algebra)

BSc 1st year - head tutor

Prof T R Ramadas

Sep–Dec '21

Functional Programming in Haskell

BSc and MSc Comp. Sci. 1st year

Prof S P Suresh

Sep–Dec '21

Probability Theory

BSc 1st year

Prof P Sankaran

Apr–Jul '21

Discrete Mathematics

BSc 1st year

Prof K V Subrahmanyam

Apr–Jul '21

Design and Analysis of Algorithms

MSc Data Science 1st year

Prof G Philip

Apr–Jul '21

Algebra I (Linear algebra)

BSc 1st year

Prof T R Ramadas

Dec'20 –Mar '21

Functional Programming in Haskell

BSc and MSc Comp. Sci. 1st year

Prof S P Suresh

Dec'20 –Mar '21

Counselor at PROMYS | Boston University

Jul–Aug '21

Counselor at PROMYS | Boston University

Jul–Aug '20

SKILLS

Languages

Bengali (mother tongue), English (fluent), Hindi (fluent), German (beginner)

Programming

JAVA, C++, Python, Haskell, R, HTML

Documentation

L^AT_EX

HONOURS AND AWARDS

Academic Excellence Award at Rutgers

2022

Received a certificate and \$100 based on performance in Written Qualifying Exams.

Shriram Scholarship at CMI

2019 – '22

Received institutional fee waiver and monthly stipend.

Ranked 4th nationally at the Bachelor of Statistics (B.Stat.) entrance examination

2019

Indian Statistical Institute (ISI)

Informatics Olympiad

2017, '18, '19

Selected among (approx) top 100-130 school students in India in Zonal Informatics Olympiad (ZIO).

Mathematical Olympiad

January '18

Selected for Indian National Mathematical Olympiad (INMO) Training Camp — top 30 school students in West Bengal.

Program in Mathematics for Young Scientists (PROMYS)

2018, '19, '20, '21

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).

Others

- 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.
- 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.

OUTREACH/ACTIVITIES

Organized a student seminar at CMI.

October - December '21

Volunteered to teach Combinatorics at (online) ICO Camp, organized by Codechef.

November '20

Interacted with students of Don Bosco School, Liluah to spread scientific awareness.

December '19