

CURRICULUM VITAE

Name: **Rupam Barman**

Office Address: Professor, Department of Mathematics,
Indian Institute of Technology Guwahati, North Guwahati, Guwahati-781039, INDIA.

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Personal Details:

- Date of birth : 1st March, 1979.
- Sex : Male
- Marital Status : Married.
- Nationality : Indian.

Ph. D. Thesis: Iwasawa Invariants of Elliptic Curves and p -adic Measures.

Supervisor: Prof. Anupam Saikia, Department of Mathematics, IIT Guwahati.

Research Interests:

Algebraic Number Theory, Elliptic Curves, Iwasawa Theory, p -adic measures, Exponential Sums, Kloosterman Sums, Hypergeometric Functions over Finite Fields, p -adic Hypergeometric Series, Modular Forms, Theory of Partitions and the mathematics influenced by Ramanujan.

Academic Qualifications:

Ph. D. April 2010, Department of Mathematics, IIT Guwahati.

Post doctoral research Mathematical Institute, University of Heidelberg, Germany during 2011.

Master of Science Mathematics, May 2001
(M. Sc.) (with 8.113 Cumulative Grade Point Average).
IIT Delhi, Haus Khaz, New Delhi, India.

Bachelor of Science Mathematics (Honors), Physics and Statistics, 1999
(B. Sc.) (with 1st class and distinction, 74 percentage).
Cotton College, under Gauhati University, Guwahati, India.

Employment:

1. Professor, Department of Mathematics, IIT Guwahati from 5th June 2021 to present.
2. Associate Professor, Department of Mathematics, IIT Guwahati from 1st July 2016 to 4th June 2021.
3. Assistant Professor, Department of Mathematics, IIT Delhi from 7th May 2013 to 30th June 2016.
4. Associate Professor, Department of Mathematical Sciences, Tezpur University from 13th August 2010 to 6th May 2013.
5. Assistant Professor, Department of Mathematical Sciences, Tezpur University from 1st January 2006 to 12th August 2010.
6. Lecturer, Department of Mathematical Sciences, Tezpur University from 31st October 2002 to 31st December 2005.

Awards and Recognitions:

1. Indo-Australian visiting fellowship by INSA to work at Newcastle University, Australia (2012-2013).
2. Post doctoral fellowship by the Mathematical Institute, University of Heidelberg Germany during 2011.
3. Post doctoral fellowship by ICTP Trieste Italy during 2011.
4. Teacher Fellowship by National Board for Higher Mathematics for a period of three years: 2008-2011.
5. Junior Research Fellowship by the Council of Scientific and Industrial Research (CSIR), New Delhi, India, December 2000.
6. GATE 2001 in Mathematics with a percentile score of 99.56 and *All India Rank: 4*.

Research Projects (ongoing/completed):

1. Distribution of certain partition functions, Core Research Grant, SERB, Amount: 27,30,882/- (2022-2025)
2. Elliptic Curves with Complex Multiplication and Hypergeometric Sums, SERB, Amount: 6,60,000/- (June 2018 to June 2021)
3. SERB-NPDF grant: Amount: 13,20,000/- (2017–2018). Dr. Zakir Ahmed (PhD from Tezpur University) worked under this project.
4. SERB-NPDF grant: Amount: 13,20,000/- (2017–2018). Dr. Sneha Bala Sinha (PhD from HRI) worked under this project
5. Iwasawa Theory of Lubin-Tate division towers and a lemma of Coleman, Amount: 1,25,000/- (UGC Minor Research project (2010–2012)).
6. Hypergeometric functions over p -adic numbers and algebraic curves, Funded by IIT Delhi (February 2015 - July 2016).
7. Hypergeometric functions, Algebraic curves and Supercongruences, Funded by IIT Guwahati (December 2016 to December 2018).

Ph. D. students (completed):

1. **Dr. Gautam Kalita.**
Title of the Thesis: Certain families of algebraic curves and polynomials, and their connections to hypergeometric series
Thesis defended in February 2014 at Tezpur University.
Current position: Associate Professor,
Indian Institute of Information Technology (IIIT) Guwahati.
2. **Dr. Neelam Saikia**
Title of the thesis: Hypergeometric series in the p -adic setting, truncated hypergeometric series and supercongruences
Thesis defended in April 2016 at IIT Delhi.
Current Positions: Nehru-Fulbright Fellow, University of Virginia, USA (May 2021 onwards).
Positions held: DST Inspire Faculty at IISc Bangalore and IIT Guwahati, Visiting Fellow, ISI Delhi
3. **Dr. Chiranjit Ray**
Title of the thesis: Arithmetic properties of certain partition functions and modular forms
Thesis defended in May 2019

Current position: Post Doctoral Fellow, ISI Delhi (November 2021 onwards)

Positions held: Post Doctoral Fellow, HRI, Allahabad.

4. **Dr. Nilanjan Bag**

Title of the thesis: **Some problems on exponential sums**

Thesis defended in December 2020

Current position: NBHM Post Doctoral Fellow, RKMVERI, Belur Math.

Position held: Post Doctoral Fellow, HRI, Allahabad.

5. **Dr. Mohit Tripathi**

Title of the thesis: **Appell series over finite fields and Gaussian hypergeometric series**

Thesis defended in January 2021

Current position: Post Doctoral Fellow, NISER, Bhubaneswar

6. **Dr. Ajit Singh**

Title of the thesis: **Divisibility of certain partition functions and modular forms**

Thesis defended in May 2022

Current position: Research Associate, IIT Guwahati

Ph. D. students (ongoing)

1. Ms. Anwita Bhowmik: Joined in July 2018
2. Ms. Deepa Antony: Joined in January 2020
3. Mr. Gurinder Singh: Joined in July 2020
4. Ms. Sulakashna: Joined in July 2020
5. Mr. Subhrajyoti Bhattacharyya (NIT Agartala) (joint supervision)

Current Post doctoral fellows:

1. Dr. Ajit Singh (Ph.D. from IIT Guwahati)
Joined in May 2022

Former Post doctoral fellows:

1. **Dr. Zakir Ahmed** (Ph.D. from Tezpur University, Tezpur, Assam).
National Post Doctoral Fellow (NPDF), 2017-2018.
Current Position: Assistant Professor, Barnagar College, Sorbhog, Assam
2. **Dr. Sneha Bala Sinha** (Ph.D. from HRI, Allahabad.)
National Post Doctoral Fellow (NPDF), 2017-2018.

MTech project thesis:

1. Archit Sachdeva, *Partitions: Dyson and M_2 Rank Differences*, 2015-2016, IIT Delhi
2. Harsimran Singh, *Partitions: Warnaars Bijection and Colored Partition Identities*, 2015-2016, IIT Delhi

MSc project supervision:

1. Ritwik Prabin Kalita, A study on algebraic numbers and algebraic integers, Jan-April 2022 (IITG)
2. Vandana Rao, Modular forms for $SL_2(\mathbb{Z})$, Jan-May 2022 (IITG)
3. Paromita Bordoloi, Rational points on elliptic curves, Jan-April 2021 (IITG)
4. Anuradha Kumari, A study on algebraic numbers, Jan-May 2020 (IITG)

5. Aishwarya Jaiswal, A study on p -adic numbers, Jan-May 2020 (IITG)
6. Abhinav Kumar Mishra, Irrationality of Zeta values and Apéry numbers, Jan-May 2019 (IITG)
7. Subhrajyoti Bhattacharyya, Ramanujan's tau function, Jan-May 2019 (IITG)
8. Mrityunjay Charan, Binary quadratic forms and primes of the form $p = x^2 + ny^2$, Jan-May 2018 (IITG)
9. Saikat Ghosh, Application of UFD in solving Diophantine equations, Jan-May 2018 (IITG)
10. Pratibha Gupta, Polynomials over finite fields, Jan-May 2017 (IITG)
11. Vishal Agarwal, Reciprocity Laws and their applications, 2015-2016 (IIT Delhi)
12. Vijayluxmi, A study on algebraic numbers, 2015-2016 (IIT Delhi)
13. Pradeep, q -series and partition, 2015-2016 (IIT Delhi)
14. Gaurav Seth, Modular Forms and partitions, 2015-2016 (IIT Delhi)
15. Aditi Gupta, Irreducible Polynomials over finite fields, 2014-2015 (IIT Delhi)
16. Soumen Sahoo, Gauss and Jacobi sums, 2014-2015 (IIT Delhi)
17. Kiran Nagarkoti and Punnet, Permutation polynomials over finite fields, 2014-2015 (IIT Delhi)
18. Ankita Sen and Hasanur Rahman, Algebraic and topological properties of p -adic numbers, 2014-2015 (IIT Delhi)

B. Tech project supervision:

1. Animesh Renanse (EEE, Samsung Fellow), Classical Algebraic Geometry and Applications in Cryptography, July 2021-May 2022
2. Ayaz Anis and Raunak Tiwari, A study on integer partitions, July 2021-May 2022
3. Mogillapalli Nikhil and Tumarada Aditya, A study on Paley Graphs, July 2020- May 2021
4. M. Siva Venkata Ranga Reddy and Pranav Jangir, A study on partition functions, July 19-May 2020
5. Seralathan V S (M&C) and Abhishek Tyagi (CSE), Mao's conjectures on Rank differences, July 2017-May 2018

In addition to the above, I supervised about 25 MSc projects during 2002–2012 at Tezpur University.

I supervised the following students under Science Academies' Summer Research Fellowship Programme

1. Mr. Varghese Babu, NISER Bhubaneswar (May-July 2013).
Title of project: A Study on Group Representation Theory
2. Mr. Tushar Bag, IIT Kanpur (May-July 2013).
Title of project: Cubic and Biquadratic Reciprocity
3. Ms. Geethanjali Nair, Pondicherry University (May-July 2014).
Title of project: Permutation Polynomials over Finite Fields
4. Ms. Ritika Gulati, IIT Delhi (May-July 2014).
Title of project: Galois Theory
5. Ms. Ramya P., Mangalore University (May-July 2017).
Title of project: Group of Symmetries

6. Mr. Rahul Gogoi, St. Anthony College, Shillong (May-July, 2020)
Title of project: A study on The Congruent Number Problem
7. Mr. Arpan Chandra Mazumder, University of Hyderabad (May-July, 2020)
Title of project: A study on cyclotomic number fields
8. Mr. Ritabrata Bhattacharyya, CMI, Chennai is doing his summer intern from 15th May 2022.
9. Mr. Ishan Banerjee, CMI, Chennai is doing his summer intern from 15th May 2022.
10. Mr. Soham Banerjee, CMI, Chennai is doing his summer intern from 15th May 2022.
11. Mr. Bibhash Kaffle, a 2nd year MSc student from Tezpur University will be working under me as an IASc-INSa-NASI Summer Research Fellow from 1st June 2022
12. Mr. Liton Kummer, a 2nd year MSc student from Tezpur University will be working under me as an IASc-INSa-NASI Summer Research Fellow from 1st June 2022

Research Publications in Referred Journals:

55. A. Singh and R. Barman, *Proofs of some conjectures of Keith and Zanello on t -regular partitions*, **Pacific Journal of Mathematics** (accepted).
54. D. Antony, R. Barman and P. Miska, *p -Adic quotient sets: Diagonal forms*, **Archiv der Mathematik** (accepted).
53. D. Antony, R. Barman and J. Chattopadhyay, *On denseness of certain direction and generalized direction sets*, **INTEGERS** (accepted).
52. A. Singh and R. Barman, *Divisibility of certain ℓ -regular partitions by 2*, **The Ramanujan Journal** (accepted).
51. D. Antony and R. Barman, *p -adic quotient sets: Cubic forms*, **Archiv der Mathematik**, 118 (2022), pp. 143–149.
50. A. Singh and R. Barman, *Proof of some conjectural congruences of da Silva and Sellers*, **Bulletin of Australian Math. Soc.**, 6 pages (accepted).
49. A. Bhowmik and R. Barman, *On a Paley-type graph on \mathbb{Z}_n* , **Graphs and Combinatorics**, 38 (2022), article no. 41, 25 pages.
48. R. Barman and M. Tripathi, *Certain transformations and special values of hypergeometric functions over finite fields*, **The Ramanujan Journal** 57 (4), pp. 1277–1306 (2022).
47. A. Singh and R. Barman, *Divisibility of certain singular overpartitions by powers of 2 and 3*, **Bulletin Australian Math. Soc.** 104 (2021), pp. 238–248.
46. N. Bag and R. Barman, *Higher order moments of generalized quadratic Gauss sums weighted by L -functions*, **Asian J. Mathematics** 25 (3), pp. 413–430 (2021)
45. A. Singh and R. Barman, *Certain eta-quotients and arithmetic density of Andrews' singular overpartitions*, **Journal of Number Theory** 229, pp. 487–498 (2021)
44. R. Barman and A. Singh, *On Mex-related partition functions of Andrews and Newman*, **Research in Number Theory** 7 (3), Art. No. 53, 12 pages (2021)
43. A. Singh and R. Barman, *New density results and congruences for Andrews' singular overpartitions*, **Journal of Number Theory**.
42. R. Barman and A. Singh, *Mex-related partition functions of Andrews and Newman*, **Journal of Integer Sequences** 24 (2021), Article no. 21.6.3, 12 pages.

41. M. Tripathi and R. Barman, *Appell series over finite fields and Gaussian hypergeometric series*, **Research in the Mathematical Sciences** 8, Art. No. 28, 34 pages, 2021
40. N. Bag and R. Barman, *An improved estimate of the fourth power mean of the general 3-dimensional Kloosterman sums mod p* , **Funct. Approx. Comment. Math.** 64 (1), pp. 39–45 (2021)
39. R. Barman, N. Saikia, *Summation identities and transformations for hypergeometric series-II*, **Funct. Approx. Comment. Math.** 61 (1), pp. 7–42 (2020)
38. N. Bag and R. Barman, *The fourth power mean of the general 4-dimensional Kloosterman sums mod p* , **Research in Number Theory** 6 (3), Art. No. 31, 15 pages (2020)
37. M. Tripathi and R. Barman, *Certain product formulas and values of Gaussian hypergeometric series*, **Research in Number Theory** 6 (3), Art. No. 26, 29 pages (2020)
36. C. Ray and R. Barman, *On Andrews' integer partitions with even parts below odd parts*, **Journal of Number Theory** 215, pp. 321–338 (2020)
35. M. Tripathi, N. Saikia and R. Barman, *Appell's hypergeometric series over finite fields*, **Int. J. Number Theory** 16 (4), pp. 673–692 (2020)
34. Z. Ahmed, C. Ray and R. Barman, *Congruences modulo powers of 2 for overpartition pairs into odd parts*, **J. Korean Math. Soc.** 57 (2), pp. 471–487 (2020)
33. C. Ray and R. Barman, *Arithmetic properties of cubic and overcubic partition pairs*, **The Ramanujan Journal** 52, pp. 243–252 (2020)
32. R. Barman and N. Saikia, *Supercongruences for truncated hypergeometric series and p -adic Gamma function*, **Math. Proc. Cambridge Phil. Soc.** 168 (1), pp. 171–195 (2020)
31. C. Ray and R. Barman, *Divisibility of Andrews' singular overpartitions by powers of 2 and 3*, **Research in Number Theory** 5 (3), Art. No. 22, 7 pages (2019)
30. R. Barman and T. Komatsu, *Lehmer's generalized Euler numbers in hypergeometric functions*, **J. Korean Math. Soc.** 56 (2), pp. 485–505 (2019)
29. M. Tripathi and R. Barman, *A finite field analogue of the Appell's series F_4* , **Research in Number Theory** 4 (3), Art. No. 35, 23 pages (2018)
28. R. Barman and N. Saikia, *Certain character sums and hypergeometric series*, **Pacific Journal of Math.** 295 (2), pp. 271–290 (2018)
27. R. Barman and N. Saikia, *Summation identities and transformations for hypergeometric series*, **Ann. Math. Québec** 42 (2), pp. 133–157 (2018)
26. R. Barman and C. Ray, *Infinite families of congruences for k -regular overpartitions*, **Int. J. Number Theory** 14 (1), pp. 19–29 (2018)
25. R. Barman and C. Ray, *Congruences for ℓ -regular overpartitions and Andrew's singular overpartition*, **The Ramanujan Journal** 45 (2), pp. 497–515 (2018)
24. R. Barman and C. Ray, *New congruences for overpartitions into odd parts*, **Integers** 18, Art. No. 50, 20 pages (2018)
23. R. Barman and A. Sachdeva, *Proof of a limited version of Mao's partition rank inequality using a theta function identity*, **Research in Number Theory** 2, Art. No. 22, 6 pages (2016)
22. R. Barman, H. Rahman and N. Saikia, *Counting points on Dwork hypersurfaces and p -adic hypergeometric function*, **Bulletin Australian Math. Soc.** 94 (2), pp. 208–218 (2016)
21. R. Barman and G. Kalita, *Hyperelliptic curves over \mathbb{F}_q and Gaussian hypergeometric series*, **J. Ramanujan Math. Soc.** 30 (3), pp. 331–348 (2015)

20. R.Barman, N.Saikia and D.McCarthy, *Summation identities and special values of hypergeometric series in the p -adic setting*, **Journal of Number Theory** 153, pp. 63–84 (2015)
19. R.Barman and N.Saikia, *Certain Transformations for Hypergeometric series in the p -adic setting*, **Int. J. Number Theory** 11 (2), pp. 645–660 (2015)
18. R.Barman and N.Saikia, *p -Adic gamma function and the polynomials x^d+ax+b and $x^d+ax^{d-1}+b$* , **Finite Fields and Their Appl.** 29 (9), pp. 89–105 (2014)
17. R.Barman and N.Saikia, *p -Adic gamma function and the trace of Frobenius of elliptic curves*, **Journal of Number Theory** 140 (7), pp. 181–195 (2014)
16. R.Barman and N.Saikia, *On the polynomials x^d+ax^i+b and $x^d+ax^{d-i}+b$ over \mathbb{F}_q and Gaussian hypergeometric series*, **The Ramanujan Journal** 35 (3), pp. 427–441 (2014)
15. R.Barman, G.Kalita and N.Saikia, *Hyperelliptic curves and values of Gaussian hypergeometric series*, **Archiv der Mathematik** 102(4), pp. 345–355 (2014)
14. R.Barman and G.Kalita, *On the polynomial x^d+ax+b over \mathbb{F}_q and Gaussian hypergeometric series*, **Int. J. Number Theory** 9 (7), pp. 1753–1763 (2013)
13. R. Barman, *Another look at Iwasawa λ -invariants of p -adic measures on \mathbb{Z}_p^n and Γ -transforms*, **Int. J. Number Theory** 9 (5), pp. 1289–1299 (2013)
12. R. Barman and G. Kalita, *Hypergeometric functions over \mathbb{F}_q and traces of Frobenius for elliptic curves*, **Proc. Amer. Math. Soc.** 141, pp. 3403–3410 (2013)
11. R. Barman and G. Kalita, *Elliptic Curves and Special Values of Gaussian hypergeometric series*, **Journal of Number Theory** 133, pp. 3099–3111 (2013)
10. R. Barman and A. Saikia, *Iwasawa λ -invariants of p -adic measures on \mathbb{Z}_p^n and their Γ -transforms*, **Journal of Number Theory** 132, pp. 2258–2266 (2012)
9. R. Barman and G. Kalita, *Certain values of Gaussian hypergeometric series and a family of algebraic curves*, **Int. J. Number Theory** 8 (4), pp. 945–961 (2012)
8. R. Barman and G. Kalita, *Hypergeometric functions and a family of algebraic curves*, **The Ramanujan Journal** 28 (2), pp. 175–185 (2012)
7. R. Barman, *On p -adic Properties of Certain Mahler Coefficients*, **J. Ramanujan Math. Soc.** 26 (3), pp. 195–202 (2011)
6. R. Barman and A. Saikia, *Iwasawa λ -invariants and Γ -transforms of p -adic measures on \mathbb{Z}_p^n* , **Int. J. Number Theory** 6 (8), pp. 1819–1829 (2010)
5. R. Barman and A. Saikia, *A note on Iwasawa μ -invariants of Elliptic curves*, **Bull. Brazilian Math. Soc.** 41 (3), pp. 399–407 (2010)
4. R.Barman and N.D.Baruah, *Theta Function Identities Associated with Ramanujan’s Modular Equations of Degree 15*, **Proc. Indian Acad. Sci. (Math. Sci.)** 120 (3), pp. 267–284 (2010)
3. R.Barman and A. Saikia, *Coefficients of a p -adic measure on \mathbb{Z}_p^n and Iwasawa lambda-invariant of its Gamma -transform*, **Asian Eur. J. Mathematics** 3 (4), pp. 545–554 (2010)
2. R. Barman and A. Saikia, *Iwasawa λ -invariants and Γ -transforms*, **J. Ramanujan Math. Soc.** 24 (2), pp. 199–209 (2009)
1. R.Barman and N.D.Baruah, *Certain Theta-function Identities and Ramanujan’s Modular Equations of Degree 3*, **Indian J. Math.** 48 (1), pp. 113–133 (2006)

Research articles currently under review:

1. Arithmetic properties of certain t -regular partitions, (with Ajit Singh and Gurinder Singh).
2. p -Adic quotient sets: linear recurrence sequences, (with Deepa Antony).
3. Number of complete subgraphs of Peisert graphs and hypergeometric functions over finite fields, (with Anwita Bhowmik).
4. Certain transformations and values of p -adic hypergeometric functions, (with Sulakashna).
5. Divisibility of the number of tagged parts over the partitions with designated summands by powers of 2 and 3, (with Gurinder Singh and Ajit Singh).

Conferences / Schools/ Invited Talks:

A. International:

1. Title of talk: Lacunary eta-quotients and distribution of certain partition functions.
Conference: International Conference on Recent Trends in Mathematics 2021, Delhi University, December 22-24, 2021
2. Title of talk: Lacunary eta-quotients and distribution of certain partition functions.
Conference: International Conference on class groups of number fields and related topics, KSOM, October 21-24, 2021
3. Title of talk: On Mex-related partition functions of Andrews and Newman.
Conference: International Conference on Special Functions and Applications (ICSFA-2020)
4. Title of talk: On the parity of certain partition functions
Conference: International Webinar on Recent Developments in Number Theory, August 17-20, 2020
5. Title of talk: Iwasawa invariants of p -adic measures.
Conference: International Conference on class groups of number fields and related topics, HRI, October 16-19, 2019
6. Title of talk: On Andrews integer partitions with even parts below odd parts.
Conference: Journees Arithmetic 2019, held at Istanbul University, Turkey during July 1-5, 2019
7. Title of talk: Hypergeometric series in Arithmetic Geometry.
Conference: International Conference on Class Groups of Number Fields and Related Topics-2018, HRI, October 8-11, 2018.
8. Title of talk: p -adic analogues of Ramanujan pi -series. Conference: 16th Annual conference on Srinivasa Ramanujan, Sastra-Ramanujan center, Kumbakonam, December 21-22, 2018
9. Title of talk: Counting points on Dwork hypersurfaces and hypergeometric functions
Conference: Journees Arithmetic 2017, held at University of Caen, France during July 3-7, 2017
10. Title of talk: Hypergeometric functions over finite fields, p -adic hypergeometric functions and algebraic curves. Conference: 29th International Conference of The Jangjeon Mathematical Society held at Pondicherry University during 08-10 August 2016.
11. Title of talk: Hypergeometric series in the p -adic setting
Conference: 29th Journées Arithmétiques held at University of Debrecen, Hungary, July 6-10, 2015.
12. Legacy of Ramanujan, held at the University of Delhi during Dec 17-22, 2012.
13. Pan Asian Number Theory Conference, held at IISER Pune, organized by International Center for Theoretical Sciences(ICTS) July 23-27, 2012.
14. Workshop on Bloch-Kato Conjectures, held at IISER Pune, organized by International Center for Theoretical Sciences(ICTS), July 17-21, 2012.

15. International Summer School on BSD Conjecture, Sardinia, Italy, June 26-July 3, 2011.
16. Delivered a talk on *Iwasawa lambda invariants of p -adic measures and their Gamma-transforms* at the Mathematical Institute, University of Heidelberg, Germany on 27th May 2011.
17. Title of talk: Iwasawa invariants of elliptic curves.
Conference: International Congress of Mathematicians (ICM), Hyderabad, August 19-27, 2010.
18. International Conference on Arithmetic Geometry, held at NCBS, Bangalore, organized by Tata Institute of Fundamental Research, Mumbai from March 23 to March 29, 2008.
19. Summer School in Iwasawa Theory, held at McMaster University, Ontario, Hamilton, Canada, from August 9 to August 13, 2007 and worked on a project entitled “ *Q -sequences and Application to Elliptic Curves*” under the supervision of Prof. Robert Pollack.

B. National:

1. Delivered 12 lectures on Field Theory in AFS-III held at IIT Guwahati during June 20-July 16, 2022.
2. Delivered the Phanidhar Datta Memorial Lecture titled “Ramanujan and the Partition Function” on 17th March 2022 at Gauhati University.
3. Delivered two lectures at the Refresher Course on “Mathematics and Statistics” organized by Gauhati University during Jan 24-Feb 7, 2022.
4. Delivered a talk titled “On the parity of certain partition functions” at the National webinar on Recent Trends in Mathematics organized by the Department of Mathematics, Cotton University, August 18-19, 2021.
5. Delivered two lectures on Group Theory at the National Workshop on Mathematics, organized by USTM and IIT Guwahati, June 28-30, 2021.
6. Delivered six lectures on Group Theory at a training programme, Kohima Science College, April 15-16, 2021
7. Title of talk: Lacunary eta-quotients and distribution of certain partition functions
IMSc online number theory webinar, 19th February 2021
8. Title of talk: p -adic analogues of Ramanujan π -series and supercongruences.
National Workshop on Geometry of Continued Fractions: Ramanujan and his successors, 2020
9. Delivered a series of lectures at the Workshop on group theory, NIT Nagaland, December 2-6, 2019.
10. Title of talk: Arithmetic properties of certain partition functions and modular forms
Conference: Number Theory, Combinatorics and Special Functions (NTCSF2019), Thapar Institute of Engg. and Tech., October 11-12, 2019.
11. Delivered six lectures on Group Theory at the Training programme for Undergraduate students, IIT Guwahati, July 1-13, 2019.
12. Delivered six lectures on Group Theory at the Teachers’ Enrichment Course, IIT Guwahati, July 1-13, 2019.
13. Delivered eight lectures on Modular Forms at the AIS on Modular Forms, IIT Guwahati, May 13-June 1, 2019.
14. Delivered three talks at the Refresher Course on Mathematics at Gauhati University during December 26-29, 2018.
15. Title of talk: Hypergeometric series and modular forms.
Workshop: Workshop on Number Theory, NISER Bhubaneswar, December 3-6, 2018

16. Delivered a Colloquium talk titled Hypergeometric series in Arithmetic Geometry at ISI Kolkata on September 24, 2018.
17. Delivered a Colloquium talk titled Values of finite field hypergeometric series, IIT Delhi on May 15, 2018.
18. Delivered 8 lectures in the Instructional School on Algebraic Number Theory, IIT Guwahati, May 14-June 2, 2018.
19. Delivered two lectures in IST, Gauhati University during December 29-30, 2017.
20. Ishan Vikas, IIT Guwahati, December 2017.
21. MTTS, IIT Guwahati, May 29 to June 24, 2017. I delivered 12 lectures on Number Theory.
22. Delivered the Dr. Amala Bezbaruah memorial lecture on Elliptic curves in Number Theory at Gauhati University on March 15, 2017.
23. Title of talk: Hypergeometric series in Arithmetic Geometry.
Conference: National Conference on Recent Advances in Mathematics and Applications (RAMA 2017), Calcutta University, 1-2 March, 2017.
24. Title of talk: p -adic analogues of Ramanujan series for π and hypergeometric series
Conference: National Conference on Advances in Mathematical Sciences, Gauhati University, 22-23 December, 2016.
25. Delivered 6 lectures on Modern Algebra at the Teacher's Enrichment Workshop (TEW) held at IIT Guwahati during December 19-24, 2016.
26. Delivered 10 lectures on Hypergeometric Series in Arithmetic Geometry at the GIAN Course: The Influence of Ramanujan in Number Theory at Tezpur University during July 25 - August 6, 2016. Prof. Bruce C. Berndt of UIUC as the foreign speaker of the GIAN Course.
27. Delivered a series of three talks on *Divisors, Picard group, and point counting on Elliptic Curve over finite fields* at the workshop on Elliptic Curve Cryptography for the DRDO scientists during March 31 - April 8, 2015 at ISI Delhi.
28. Visited Harish-Chandra Research Institute (HRI) during July 6-11, 2014. Delivered a talk titled *Hypergeometric functions over finite fields and p -adic numbers* on 8th July 2014.
29. Delivered talks on various topics of Number Theory at the DST Inspire Science Camp organized by Sibsagar Girls' College during April 8-12, 2014.
30. Delivered an invited talk on Some Unsolved Problems in Number Theory at Sibsagar College on April 9, 2014.
31. Inaugural talk titled *Elliptic Curves in Number Theory* at the national annual fest INTEGRATION 2014, organized by St. Stephens College, New Delhi on 12th February 2014.
32. Invited talk titled *Hypergeometric functions over finite fields and trace of Frobenius of elliptic curves* at ISI, Delhi on 6th November 2013.
33. Invited talk titled *Elliptic Curves and Hypergeometric functions over finite fields* at the National Seminar Recent Trends in Mathematics and Application on 7th October 2013 at Digboi College, Assam.
34. Invited talk titled *Elliptic curves over finite fields* at SAG, DRDO, Delhi on 25th September 2013.
35. Delivered a series of four lectures on various topics of Number Theory at the UGC sponsored Refresher Course in Mathematics for College/University Teachers organized by the Department of Mathematics, North Eastern Hill University (NEHU) during April 5-7, 2012.

36. Tutor for the Advanced Training in Mathematics for Teachers (ATML) in Linear Algebra held at IIT Guwahati from July 3-17, 2010.
37. Advances in Mathematics: Focus on Women in Mathematics held at School of Physical Sciences, Jawaharlal Nehru University, New Delhi during October 5-7, 2009.
38. Advanced Training in Mathematics on Arithmetic Geometry held at IIT Guwahati from September 22 to 30, 2008.
39. p -Adic Semester at School of Mathematics, Tata Institute of Fundamental Research Mumbai from July 23 to August 30, 2008. During my stay at TIFR, I worked under the supervision of Prof. R. Sujatha.
40. Galois Representations and Modular Forms: Workshop in Arithmetic Geometry held at Chennai Mathematical Institute, Chennai, India from September 24 to October 05, 2007.
41. 21st Annual Conference of Ramanujan's Mathematical Society held at the Department of Mathematics and Statistics, University of Hyderabad from July 3 to July 8, 2006. I presented the paper *Theta Function Identities Associated with Ramanujan's Modular Equations of Degree 15*.

Workshop/Conference organized:

I have been organising training camps and workshops (funded by National Board for Higher Mathematics, DST and National Center for Mathematics) for the students of NE region since 2010. Several students from NE who attended those training programme joined PhD programmes in India and abroad. During 2016–2022, I have organised 5 Instructional schools funded by National Center for Mathematics at IIT Guwahati

1. Annual Foundation School (AFS)-III (funded by NCM), June 20-July 16, 2022
2. Online workshop on Modular Forms (funded by NCM), December 14-19, 2020
3. Alumni Symposium on Mathematics and Computing, Department of Mathematics IITG, September 19-20, 2020
4. Advanced Instructional School (AIS) on Modular Forms (Funded by NCM), May 13-June 1, 2019
5. Advanced Instructional School (AIS) on Algebraic Number Theory (Funded by NCM), May 14-June 2, 2018
6. Annual Foundation School (AFS-I) held at IIT Guwahati during December 1-28, 2016
7. NBHM sponsored Winter School on Galois Theory during December 12-15, 2012.
8. NBHM and DST sponsored Winter School and Conference on Algebra and Number Theory during December 23-29, 2011
9. NBHM and DST sponsored Workshop on Algebra and Number Theory during December 22-26, 2010.

Teaching: I have about 20 years of teaching experience. I have been delivering talks in several Instructional Schools/Workshops/Training programmes. I organised four Instructional Schools and Workshops at IIT Guwahati during 2016-2022. I delivered eight to ten lectures in each of these programs. In addition, I also delivered talks at Ishan Vikas organised by IIT Guwahati in December 2017. I have been taking classes in MTTS programs. I delivered six lectures on Modern Algebra at the Teachers Enrichment Workshop (TEW) held at IIT Guwahati during December 19–24, 2016. I also delivered talks in three programs organised by Center for Educational Technology (CET) IIT Guwahati for teachers and students of NE region. I have been visiting Kohima Science College, Nagaland and offering mini courses for BSc and MSc students.

(1) IIT Guwahati (July 2016–May 2022): I taught the following courses.

1. MA 521: Modern Algebra (2017, 2020)
2. MA 622: Galois Theory (2018, 2019)
3. MA 627: Modular Forms (2019, 2020)
4. MA 509: Algebraic Number Theory (2018)
5. MA 621: Rings and Modules (2020)
6. MA312M: Modern Algebra (2021)
7. MA 222: Elementary Number Theory and Algebra (2022)
8. MA001: Preparatory Mathematics-I (2016)
9. MA 102: Mathematics-II (2017, summer-2017)
10. MA 101: Mathematics-I (2019, 2021)
11. MA 222: Elementary Number Theory and Algebra (2022)

(2) IIT Delhi (May 2013–June 2016): I taught the following courses.

1. MAL 705: Discrete Mathematical Structures (2013)
2. MAL 111: Introduction to Analysis and DE (2013)
3. MTL 100: Calculus (2014, 2015, 2016)
4. MTL 180: Discrete Mathematical Structures (2014, 2015, 2016)
5. MAL 863: Algebraic Number Theory (2014, 2015)
6. MAL 738: Commutative Algebra (2016)
7. MAL 735: Number Theory (2015)

(3) Tezpur University (October 2002–April 2013): I taught the following courses.

- B. Tech: Mathematics I, Mathematics II
- Integrated M. Sc.: Mathematics I, Mathematics II, Modern Algebra, Linear Algebra, Differential Equations
- M. Sc.: Modern Algebra, Advanced Algebra, Complex Analysis, Measure Theory, Algebraic Number Theory, Elliptic Curves, Linear Algebra, Number Theory, Graph Theory, Real Analysis

Administrative Responsibilities:

1. Department Representative for Institute Research and Development Committee since September 2022.
2. Member, DPPC, Department of Mathematics, IIT Guwahati, January 2022-January 2024
3. Member, Institute Lecture Series Committee for 2016-2019. I invited Professor Ken Ono of University of Virginia and organised a public lecture in December 2019.
4. Member Secretary, DPPC, Department of Mathematics, IIT Guwahati, January 2020-January 2022.
5. Member, DPPC, Department of Mathematics, IIT Guwahati, January 2018-January 2020
6. Faculty Advisor of MSc 2017–2019 Batch, Departmental of Mathematics, IIT Guwahati.
7. Member, Departmental Disciplinary Committee, January 2019-till date

8. Professor Ken Ono joined the Department of Mathematics, IIT Guwahati as an Honorary Professor on October 22, 2020 for a period of two years. I am the faculty from the Department associated with Prof. Ken Ono to establish academic collaborations. Prof. Ono has offered a course on Analytic Number Theory in 2021.
9. Member Secretary Departmental Faculty Board, Departmental of Mathematics, IIT Delhi, 2014–2015 (2 years).

Other Academic Responsibilities: I have served as referee for research articles for the following journals

1. Advances in Mathematics
2. Journal of Number Theory
3. Proceedings of the London Mathematical Society
4. Proceedings of the American Mathematical Society
5. Finite Fields and Their Applications
6. European Journal of Combinatorics
7. International Journal of Number Theory
8. Journal of Mathematical Analysis and Applications
9. Research in Number Theory
10. Results in Mathematics
11. The Ramanujan Journal
12. Science China Mathematics
13. Research in Mathematical Sciences
14. Bulletin of the Australian Math. Soc.
15. Proceedings of the Edinburgh Mathematical Society
16. Journal of Analysis
17. Thai Journal of Mathematics
18. Journal of Difference Equations and Applications
19. Boletim da Sociedade Paranaense de Matematica
20. SIGMA: Symmetry, Integrability and Geometry: Methods and Applications
21. Journal of Integer Sequences
22. INTEGERS: Electronic J. Combinatorial Number Theory
23. Proceedings - Mathematical Sciences
24. Indian Academy of Sciences
25. Journal of Ramanujan Mathematical Society
26. Proceedings of Jangjeon Mathematical Society, South Korea
27. Indian Journal of Pure and Applied Mathematics
28. Palestian Journal of Mathematics

29. Journal of the Indian Mathematical Society
30. Far East Journal of Mathematics
31. Proceedings of the National Academy of Sciences, India Section A: Physical Sciences
32. Journal of Assam Academy of Mathematics
33. Mathematical Reviews (MR) and Zentralblatt MATH.

I have evaluated PhD thesis of the following Universities/Institutes.

1. IISc Bangalore
2. IIT Roorkee
3. IIT Patna
4. Tezpur University
5. North Eastern Hill University (NEHU)
6. Manipur University
7. Mysore University
8. Central University of Jharkhand
9. Thapar Institute of Engineering and Technology
10. Sambalpur University

List of Referees:

Available upon request.

Last updated in August 2022