Dr. Manjil P. Saikia

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CV

Research Interests

Enumerative and algebraic combinatorics; elementary number theory.

Employment History

Nov 2019 – ···· ◇ **Research Associate** Department of Mathematics, Cardiff University, Wales.

Sep 2015 – Sep 2019 ◇ **Research Fellow** Fakultät für Mathematik, Universität Wien, Austria.

Education

2015 – 2019 ◇ **Dr. rer. nat., Universität Wien, Austria** in Mathematics.
Thesis title: *Topics on Alternating Sign Matrices and Aztec rectangles*.
Supervisor: Prof. Ilse Fischer

2014 – 2015 ◇ **Postgraduate Diploma, The Abdus Salam International Centre for Theoretical Physics, Italy** in Mathematics.
UNESCO funded scholarship.
Thesis title: *Representations of the Symmetric Group*.
Supervisor: Prof. Fernando Rodriguez Villegas

2009 – 2014 ◇ **Integrated M.Sc., Tezpur University, India** in Mathematics.
Gold Medal. INSPIRE Scholarship from Government of India.
Thesis title: *A study of the crank function with special emphasis on Ramanujan's Lost Notebook.*
Supervisor: Prof. Nayandeep Deka Baruah

Research Publications

Journal Articles

1. Dutta, P. & Saikia, M. P. (2019). On deficient perfect numbers with four distinct prime factors. *Asian Eur. J. Math. accepted*, 13 pp.
2. Laugier, A. & Saikia, M. P. (2017). Some properties of Fibonacci numbers, generalized Fibonacci numbers and generalized Fibonacci polynomial sequences. *Kyungpook Math. J. 57*(1), 1–84. doi:10.5666/KMJ.2017.57.1.1
3. Saikia, M. P. (2017). Enumeration of domino tilings of an Aztec rectangle with boundary defects. *Adv. in Appl. Math. 89*, 41–66. doi:10.1016/j.aam.2017.04.002
4. Laugier, A. & Saikia, M. P. (2016). A combinatorial proof of a result on generalized Lucas polynomials. *Demonstr. Math. 49*(3), 266–270. doi:10.1515/dema-2016-0022
5. Laugier, A., Saikia, M. P., & Sarmah, U. (2016). Some results on generalized multiplicative perfect numbers. *Ann. Univ. Ferrara Sez. VII Sci. Mat. 62*(2), 293–312. doi:10.1007/s11565-016-0248-9
6. Saikia, M. P. (2015a). A study of the crank function in Ramanujan's Lost Notebook. *Math. Student, 84*(1-2), 105–121.
7. Saikia, M. P. (2015b). The Pythagoras theorem. *Asia Pac. Math. Newsl. 5*(2), 5–8.
8. Laugier, A. & Saikia, M. P. (2014a). A characterization of a prime P from the binomial coefficient $\binom{n}{p}$. *Math. Student, 83*(1-4), 221–227.

9. Laugier, A. & Saikia, M. P. (2014b). Some results about linear recurrence relation homomorphisms. *Notes Numb. Thy. Disc. Math. 20*(4), 58–68.
10. Saikia, M. P. (2013). Cranks in Ramanujan's lost notebook. *J. Assam Acad. Math. 6*, 59–63.
11. Laugier, A. & Saikia, M. P. (2012). A new proof of lucas' theorem. *Notes Numb. Thy. Disc. Math. 18*(4), 1–6.
12. Saikia, M. P. & Vogrinc, J. (2011). Binomial symbols and prime moduli. *J. Indian Math. Soc. (N.S.) 78*(1-4), 137–143.
13. Saikia, M. P. & Vogrinc, J. (2010). A simple number theoretic result. *J. Assam Acad. Math. 3*, 91–96.

Conference Proceedings

1. Akagi, J. T., Gaona, C. F., Mendoza, F., Saikia, M. P., & Villagra, M. (2019). Hard and Easy Instances of L-Tromino Tilings. In G. K. Das, P. S. Mandal, K. Mukhopadhyaya, & S.-i. Nakano (Eds.), *WALCOM: Algorithms and Computation, LNCS 11355* (pp. 82–95). Cham: Springer International Publishing.

Preprints

1. Fischer, I. & Saikia, M. P. (2019). *Refined enumeration of symmetry classes of alternating sign matrices (under review in J. Comb. Thy., Ser. A)*.
2. Akagi, J. T., Gaona, C. F., Mendoza, F., Saikia, M. P., & Villagra, M. (2018). *Hard and Easy Instances of L-Tromino Tilings (under review in Theoretical Computer Science)*.
3. Saikia, M. P. (2018). *On deficient perfect numbers with four distinct prime factors, ii.*

Selected Talks

1. Combinatory Analysis 2018: A Conference in Honor of George Andrews' 80th birthday, Pennsylvania State University, State College, USA, July 2018 (*contributed talk*)
2. Vienna Discrete Mathematics Seminar, Technische Universität Wien, April 2018
3. 80th Séminaire Lotharingien de Combinatoire, Institut Camille Jordan - Bâtiment Braconnier, Université Claude Bernard Lyon 1, France, March 2018 (*contributed talk*)
4. PhD Colloquium, Fakultät für Mathematik, Universität Wien, Austria, March 2018 (*invited talk*)
5. First Interdisciplinary Symposium of the Vienna Doctoral Schools, Universität Wien, Austria, September 2017 (*contributed talk*)
6. Mini-Conference on Networks and Games, Indian Statistical Institute, Kolkata, India, July 2017 (*invited talk*)
7. Stat-Math Unit Seminar, Indian Statistical Institute, Delhi, India, February 2017
8. International Conference of The Indian Mathematics Consortium in cooperation with American Mathematical Society, Banaras Hindu University, Varanasi, India, December 2016 (*contributed talk*)
9. ALEA in Europe Young Researcher's Workshop, Technische Universität Wien, Austria, September 2016 (*contributed talk*)
10. 3rd Algorithmic and Ennumerative Combinatorics Summer School, Research Institute for Symbolic Computation, Johannes Kepler Universität Linz, August 2016 (*contributed talk*)
11. Vienna Discrete Mathematics Seminar, Technische Universität Wien, June 2016
12. National Seminar on Advances in Mathematical Sciences, Gauhati University, December 2015 (*contributed talk*)
13. ICM International Satellite Conference on Rings and Near Rings, North Eastern Hill University, Shillong, India, September 2010 (*invited talk*)

Selected Conferences/Workshops Attended*

*Excluding the ones where I have given a talk.

1. 5th Algorithmic and Ennumerative Combinatorics Summer School, Research Institute for Symbolic Computation, Johannes Kepler Universität Linz, Austria, July-August 2019
2. 31st International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), University of Ljubljana, Ljubljana, Slovenia, July 2019
3. 13th International Conference and Workshops on Algorithms and Computation (WALCOM), Indian Institute of Technology, Guwahati, India, February-March, 2019
4. 4th Algorithmic and Ennumerative Combinatorics Summer School, Research Institute for Symbolic Computation, Johannes Kepler Universität Linz, Austria, July-August 2018
5. Workshop on Computer Algebra in Combinaroics, Erwin Schrödinger International Institute for Mathematics and Physics, Universität Wien, Austria, November 2017
6. Workshop on Enumerative Combinaroics, Erwin Schrödinger International Institute for Mathematics and Physics, Universität Wien, Austria, October 2017
7. ALEA in Europe Workshop, Technische Universität Wien, Austria, October 2017
8. European Conference on Combinatorics, Graph Theory and Applications, Technische Universität Wien, Austria, August-September 2017
9. Elliptic Hypergeometric Functions in Combinatorics, Integrable Systems and Physics, Erwin Schrödinger International Institute for Mathematics and Physics, Universität Wien, Austria, March 2017
10. Computer Algebra and Elementary Particle Theory at the Large Scale: 10 Years of JKU-DESY Collaboration, Research Institute for Symbolic Computation, Johannes Kepler Universität Linz, Austria, February 2017
11. 2016 Symposium Diskrete Mathematik, Freie Universität Berlin, Zuse-Institut Berlin, Germany, July 2016
12. 28th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Simon Fraser University, Vancouver, Canada, July 2016
13. 76th Séminaire Lotharingien de Combinatoire, Obernai, France, April 2016
14. Conference dedicated to the scientific legacy of Marcel-Paul Schützenberger, Université de Bordeaux, Bordeaux, France, March 2016
15. CIMPA International Research School and Conference on Fourier analysis of groups in Combinatorics, North-Eastern Hill University, Shillong, India, November 2013
16. Advanced Instructional School on Analytic Number Theory, Kalinga Institute of Industrial Technology (KIIT) University, Bhubaneshwar, India, June 2013
17. The Legacy of Srinivasa Ramanujan, University of Delhi, New Delhi, India, December 2012
18. Pan Asian Number Theory Conference, Indian Institute of Science Education and Research, Pune, India, July 2012
19. Advanced Instructional School on Number Theory (The Circle Method), The Institute of Mathematical Sciences, Chennai, India, June - July 2012

Teaching

Actively involved in Mathematical Olympiad training camps in the North-East of India since 2008. I have delivered lectures for high school students at the following places.

- Kaliabor College, Assam, India (2008, 2012, 2013)
- Darrang College, Tezpur, India (2011, 2014)
- Gauhati University, Guwahati, India (2012, 2013, 2014)
- North Eastern Hill University, Shillong, India (2012, 2013, 2014)
- Tinisukia Women's College, Assam, India (2013)
- Birjhora Higher Secondary School, Bongaigaon, India (2017)
- Inspire Academics, Tezpur, India (2018)

Professional Experience

Apr 2011 – · · · · ◇ **Managing Editor**, Gonit Sora.
Co-founded and have been editing an online bi-lingual web-magazine for mathematics called *Gonit Sora* ('pathway to mathematics' in Assamese)
https://gonitsora.com

Professional Duties

Reviewer of articles for the following journals/conferences:

- The Mathematics Student (Indian Mathematical Society) (1 paper)
- Mathematica Slovaca (1 paper)
- Mathematics (MDPI) (2 papers)
- Axioms (MDPI) (1 paper)
- Symmetry (MDPI) (1 paper)
- CSAE 2018 (ACM) (1 paper)

Reviewer for *Mathematical Reviews, American Mathematical Society*, since 2015.
Reviewer for *Zentralblatt Math, European Mathematical Society – Springer*, since 2014.

Memberships of Professional Bodies

- **American Mathematical Society**, ordinary member (since 2015)
- **Ramanujan Mathematical Society**, life member (since 2018)
- **Society for Industrial and Applied Mathematics**, ordinary member (since 2019)

Skills

Languages ◇ English (native), Assamese (mother tongue), Hindi (fluent), Bengali (fluent).
Coding ◇ Mathematica, LaTeX, SageMath.
Web Dev ◇ HTML, CSS, Apache Web Server.

Miscellaneous Experience

Awards and Achievements

2015 ◇ **UNESCO Scholarship**, Awarded to study at The Abdus Salam ICTP, September 2014 – August 2015

2014 ◇ **Gold Medal**, for academic excellence in Master of Science (Mathematics) course at Tezpur University, November 2015.

◇ **UGC-CSIR National Eligibility Test**, qualified with Indian National Rank 17, June 2014.

2011 ◇ **Assam Academy of Mathematics**, certificate of excellence on their golden jubilee year.

2009 ◇ **INSPIRE Scholarship**, awarded by Department of Science and Technology, Government of India to the top 1% students of the country, August 2009 – July 2014.

2008 ◇ **Assam Academy of Mathematics**, Prof. Bapu Krishna Choudhury Memorial Prize, for getting the first prixe in the group Olympiad (Matheletics) exam.

◇ **Regional Mathematical Olympiad**, qualified from the North Eastern Region of India.

2007 ◇ **Dr. Subratananda Dowerah Memorial Gold Medal**, awarded by the Assam Academy of Mathematics for topping the mathematics Olympiad.

◇ **Anundoram Barooah Award** from the Government of Assam, India to first division holders in school leaving examination, 2007.

Summer Internships

2012 ◇ Summer Research Fellowship Awarded jointly by the three science academies of India, June – July 2012 at **Institute of Mathematical Sciences, Chennai** under **Prof. R. Balasubramanian**.

2011 ◇ Summer Research Fellowship Awarded jointly by the three science academies of India, June – July 2011 at **Indian Institute of Science Education and Research, Mohali** under **Prof. Kapil Hari Paranjape**.

2010 ◇ Summer Research Fellowship Awarded **Chennai Mathematical Institute**, June – July 2010 under **Prof. Purusottam Rath**.

References

Available upon request.

Last updated on 5th November 2019.