Personal Information

Name	Jyothsnaa Sivaraman
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Employment

1 Mar 2024 – Present	**Assistant Professor, Grade I**, *Indian Institute of Science Education and Research*, Thiruvananthapuram, India
15 May 2023 – 29 Feb 2024	**INSPIRE Faculty fellow**, *Indian Statistical Institute*, Bangalore, India
Mar 2022 – 12 May 2023	**NBHM Postdoctoral fellow**, *Chennai Mathematical Institute*, Chennai, India
Mar 2021 – Feb 2022	**Postdoctoral fellow**, *Chennai Mathematical Institute*, Chennai, India Mentor: Prof. P. Rath.
Aug 2019 – Jan 2021	**Postdoctoral fellow**, *Department of Mathematics, University of Toronto*, Toronto, Canada Mentor: Prof. V. Kumar Murty.

Education

2016–2019	**Senior Research Fellow**, *The Institute of Mathematical Sciences*, Chennai, India, Completed Doctorate in Mathematics Thesis title: On Euclidean ideal classes in abelian extensions, Thesis advisor: Prof. Sanoli Gun.
2014–2016	**Junior Research Fellow**, *The Institute of Mathematical Sciences*, Chennai, India, Completed Master of Science in Mathematics Master's thesis title: Aspects of Diophantine approximation, Thesis advisor: Prof. Sanoli Gun.
2008–2012	**Bachelor of Engineering**, *Birla Institute of Technology and Science, K.K.Birla Goa campus*, Goa, India Specialized in Electrical and Electronics.

Research Interest

Analytic aspects of algebraic numbers.

Applications of sieve methods to problems in algebraic number theory.

Publications/ Preprints

1. **Representing ideal classes of ray class groups by product of prime ideals of small size**, J.-M. Deshouillers, S. Gun, O. Ramaré, J. Sivaraman. Mathematische Zeitschrift, 310 (2025), 310, pp 68.

2. **On the refined Koblitz conjecture**, S. Dey, A. Saha, A. Vatwani, J. Sivaraman, To appear in Journal of Mathematical Analysis and Applications 546, Issue 1, 1 June 2025, 129-212.

3. **An application of counting ideals in ray classes**, S. Gun, O. Ramaré, J. Sivaraman, Acta Arithmetica, 216 (2024), no. 2, 99–121.

4. **A note on the two variable Artin's conjecture**, S. Hazra, M. Ram Murty, J. Sivaraman, Journal of Number Theory, 262 (2024), 161-185

5. **On Markoff type surfaces over number fields and the arithmetic of Markoff numbers**, S. Kim, D. Schindler, J. Sivaraman, Research Directions in Number Theory: Women in Numbers V, Eds. A. Bucur, W. Ho, R. Scheidler, Association for Women in Mathematics Series, Springer Cham (2024), 271-293

6. **Explicit upper bounds on the average of Euler-Kronecker constants of narrow ray class fields**, N. Kandhil, R. Lunia, J. Sivaraman, Research in Number Theory 9(2023), Paper no: 69.

7. **Counting ideals in ray classes**, S. Gun, O. Ramaré, J. Sivaraman, Journal of Number Theory 243 (2023), 13–37.

8. **Euclidean ideal classes in Galois number fields of odd prime degree**, V. Kumar Murty, J. Sivaraman, Research in Number Theory 8 (2022), Paper no: 51.

9. **Primitive roots for Pjateckiĭ-Šapiro primes**, J. Sivaraman, Journal de Theorie des Nombres de Bordeaux, 33 (2021), no. 1, 83-94.

10. **On existence of Euclidean ideal classes in real cubic and quadratic fields with cyclic class group**, S. Gun, J. Sivaraman, Michigan Mathematical Journal, 69 (2020), no. 2, 429-448.

11. **On Euclidean ideal classes in certain Abelian extensions**, J.-M. Deshouillers, S. Gun, J. Sivaraman, Mathematische Zeitschrift, 296 (2020), no. 1 - 2, 847-859.

12. **Existence of Euclidean ideal classes beyond certain rank**, J. Sivaraman, Journal of Ramanujan Mathematical Society, 34 (2019), no. 4, 427-432.

13. **On Gerth's heuritics for certain quadratic extensions of a Galois number field of class number** 1**.** C. G. K. Babu, R. Bera, B. Sury, J. Sivaraman. (Submitted)

14. **On the existence of near-primitive roots**, J. Sivaraman. (In preparation)

Teaching Experience

As instructor

Delivered 6 lectures on Number theory and Cryptography at the 13th Summer training program in Mathematics for M.Sc students, at the Ramanujan Institute for advanced study in mathematics, University of Madras, Chennai, India, May 20 2025 - May 24 2025.

Course Instructor for MAT 2012/424/4214: Number theory and Cryptography at IISER Thiruvananthapuram, Vithura, Kerala, India, Jan 1 2025 - May 8 2025 (This is two module course. The first module is on elementary number theory, aimed at second year BS-MS, fourth year BS-MS and M. Sc. students. The second module is on cryptography, aimed at fourth year BS-MS students and M. Sc. students)

Course Instructor for MAT/MSM 313: Linear algebra, at IISER Thiruvananthapuram, Vithura, Kerala, India , July 29 2024 - Dec 5, 2024 (Course for third year BS-MS students and 1st year M. Sc. students)

Course Instructor for Introduction to Sieve methods, at the Chennai Mathematical Institute, Chennai, India, Jan 3, 2023 - May 12, 2023 (Course for third year B. Sc students and M. Sc. students)

Course Instructor for Algebraic number theory, at the Chennai Mathematical Institute, Chennai, India, Sept 23 - Dec 14, 2021 - Taught jointly with Prof. P. Rath (Course for second and third year B. Sc students)

Course Instructor for MAT223F : Linear algebra, at the University of Toronto, Toronto, Canada, Sept 10 - Dec 20, 2020. (Course for second year students in Arts and Sciences)

Course Instructor for MAT223S : Linear algebra, at the University of Toronto, Toronto, Canada, Jan 6 - Apr 25, 2020. (Course for second year students in Arts and Sciences)

Course instructor for MAT188F : Linear algebra held at the University of Toronto, Toronto, Canada, Sept 1 - Dec 25, 2019. (Course for first year Engineering students)

As Tutorial assistant

Tutorial Assistant for Algebra and Complex analysis at Annual Foundation School - I, held at Pondicherry University, Pondicherry, India, Jun 6 - 11, 2022. (Course for graduate students)

Tutorial Assistant for a course in Linear algebra, held at the Chennai Mathematical Institute, Chennai, India, Aug 1-Nov 30, 2017. (Course for first year B. Sc students)

Tutorial Assitant at Advanced Instructional School on Class field theory , held at the Chennai Mathematical Institute, Chennai, India, May 8-27, 2017. (Course for doctoral students)

Tutorial Assitant for a course in Algebra II - Galois theory, held at The Institute of Mathematical Sciences, Chennai, India, Jan 1-Apr 30, 2017. (Course for graduate students)

Tutorial Assistant for Refresher course on Algebraic number theory for college teachers, held at Kerala School of Mathematics, Kozhikode, India Feb 9-12, 2017. (Course for college teachers)

Tutorial Assistant for a course on Complex analysis, held at Chennai Mathematical Insitute, Chennai, India Jan 1-Apr 30, 2016. (Course for second year B. Sc students)

Invited talks

Delivered a talk the conference titled, 'Analytic number theory' held in honour of Prof. Olivier Ramaré, on the 6th Feb 2025 at IISER Berhampur, Odisha, India.

Delivered a talk at the Women In Numbers (WIN 2025) on 18th Jan 2025 at IISER Pune, Maharashtra, India.

Delivered a talk at the International Conference on Transcendence, Arithmetic and Diophantine Explorations held in honour of Prof. Sinnou David and Prof. Patrice Philippon, on 5th Jan 2025 at Kerala School of Mathematics, Kozhikode, Kerala, India.

Delivered a talk at the 39th Annual Conference of the Ramanujan Mathematical Society (RMS 2024) on 29 Dec, 2024 at CHRIST (Deemed to be University), Bengaluru, India.

Delivered a talk at the conference titled, 'Celebrating Number Theory in India,' held in honour of Prof. M. Ram Murty, on the 12th Dec 2024 at IISER Pune, Maharashtra, India.

Delivered an invited talk on 22nd Nov 2024 at the Indian Institute of Space Science and Technology, Thiruvananthapuram, Kerala, India.

Delivered a talk at the Inaugural meeting of Asian-Oceanian Women in Mathematics (AOWM) on the 25th Apr 2023.

Delivered a talk at the PIMS Collaborative Research Group weekly seminar on the 15th Mar 2023, online.

Delivered a talk at the Chennai-Tirupati number theory seminar on the 12th Feb 2023 at the Chennai Mathematical Institute.

Delivered a talk on 29th Dec 2022 at the 88th Annual conference of the Indian Mathematical Society held at Birla Institute of Technology, Mesra, Ranchi, India.

Delivered a talk on 31st Aug 2021 at the Women in Numbers 5 conference held online.

Delivered a talk on 12th May 2021 at the seminar of the Indian number theory working group, Institute of Mathematical Sciences, Chennai, India.

Delivered a talk on 12th Mar 2021 at the Queen's University number theory seminar, Queen's University, Kingston, Canada.

Delivered a talk on 3rd Oct 2020 at the American Mathematical Society Fall sectional meeting held online at the Pennsylvania State University, Pennsylvania, USA.

Delivered a talk on 14th Feb 2019 at the Indo-Japan meeting held at the Institute of Mathematical Sciences, Chennai, India.

Delivered a talk on 18th Jan 2019 at the Indo-French conference held at the Institute of Mathematical Sciences, Chennai, India.

Delivered a talk on 4th Jan 2019 at the conference on Diophantine approximation, transcendence, topological dynamics and topics in related areas of number theory and combinatorics held at Ramakrishna Mission Vivekananda Educational and Research Institute, Belur, Kolkata, India.

Delivered a talk on 17th Dec 2018 at the Inter-city number theory seminar held at Indian Institute of Science Education and Research, Tirupati, India.

Delivered a talk on 14th Oct 2018 at the Workshop on modular forms held at Kerala School of Mathematics, Kozhikode, India.

Other Activities

Events organised

1. Organised a conference titled "Modular forms : in honour of Prof. B. Ramakrishnan's 60th birthday" jointly with R. Lunia and B. Paul. (17th-19th September 2021)

2. Organised a Working Group Meeting at IISER Thiruvananthapuram, jointly with Prof. S. Gun. (17th-19th July 2024)

Academic visits

IISER Berhampur, Odisha, India during Feb 5-7, 2025

IISER Pune, Maharashtra, India during Jan 17-19, 2025

Kerala School of Mathematics, Calicut, Kerala, India during Jan 3-5, 2025.

Indian Institute of Space Science and Technology during Nov 22, 2025.

International Center for Theoretical Sciences (ICTS - TIFR), Bangalore, India during Apr 24-28, 2023.

Queen's University, Kingston, Ontario, Canada on Feb 19, 2020.

Brock University, St. Catherines, Ontario, Canada on Jan 10, 2020.

Harish-Chandra Research Institute, Allahabad, India during Sep 22-Oct 7, 2018.

Institut de Mathématiques de Jussieu - Paris Rive Gauche, Paris, France during Jul 3-31, 2017.

Conferences attended

Conference titled, 'Analytic number theory' held in honour of Prof. Olivier Ramaré, from Feb 3-7 2025 at IISER Berhampur, Odisha, India.

Women In Numbers (WIN 2025) from Jan 17-19 2025 at IISER Pune, Maharashtra, India.

International Conference on Transcendence, Arithmetic and Diophantine Explorations held in honour of Prof. Sinnou David and Prof. Patrice Philippon, from Jan 3-5 2025 at Kerala School of Mathematics, Kozhikode, Kerala, India.

The 39th Annual Conference of the Ramanujan Mathematical Society (RMS 2024) from Dec 27-29, 2024 at CHRIST (Deemed to be University), Bengaluru, India.

Celebrating Number Theory in India, held in honour of Prof. M. Ram Murty, from Dec 9-13 2024 at IISER Pune, Maharashtra, India.

Inaugural meeting of Asian-Oceanian Women in Mathematics (AOWM) held at International Center for Theoretical Sciences (ICTS - TIFR), Bangalore, India during Apr 24-28, 2023.

Balu Fest held online at the Institute of Mathematical Sciences during Mar 12-18, 2021.

American Mathematical Society Fall sectional meeting held online at the Pennsylvania State University during Oct 3-4, 2020.

Women in Numbers 5 held in Canada, 2020

Canadian Mathematical Society winter meeting held in Toronto, Canada during Dec 6-9, 2019.

Indo-Japan meeting held at the Institute of Mathematical Sciences, Chennai, India during Feb 13-15,2019.

Indo-French conference held at the Institute of Mathematical Sciences, Chennai, India during Jan 16-18, 2019.

Workshop and conference on Diophantine approximation, transcendence, topological dynamics and topics in related areas of number theory and combinatorics held at Ramakrishna Mission Vivekananda Educational and Research Institute, Belur, Kolkata, India during Jan 03-13, 2019.

Inter-city number theory seminar held at Indian Institute of Science Education and Research, Tirupati, India during Dec 17-18, 2018.

Workshop on modular forms held at Kerala School of Mathematics, Kozhikode, India during Oct 12-14, 2018.

The mathematics of Artin's conjectures held at Yerevan state university, Yerevan, Armenia during May 21-25, 2018.

Number theory: arithmetic, diophantine and transcendence held at Indian Institute of Technology Ropar, Ropar, India during Dec 22-25, 2017.

Computer skills

C, SAGE, Java, LaTeX