

Contact Information

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Personal Data

Date of Birth: July 15, 1990
Place of Birth: Ghazipur, Uttar Pradesh, India
Nationality: Indian
Marital status: Single

Education and Research Experience

2007 – 2010	B.Sc (Maths,Physics,Comp App.)	Ewing Christian College, Allahabad.
2010 – 2012	M.Sc.(Mathematics)	Indian Institute of Technology, Mumbai.
2012 – 2015	Lecturer (Mathematics)	RGUKT (IIIT), RK Valley(A.P.).
2015 – 2021	Ph.D (Mathematics)	IMSc, Chennai, India.
Aug, 2021 – Sep, 2022	CV Raman Postdoctoral Fellow	IISc, Bangalore, India.
Oct, 2022 – Present	Assistant Professor	Univesity of Delhi, India.

Ph.D Adviser : Dr. Sankaran Viswanath (IMSc, Chennai)

Ph.D Co-adviser: Dr. K.N. Raghavan (IMSc, Chennai)

Publications and Preprints

1. Mrigendra Singh Kushwaha, K.N. Raghavan, Sankaran Viswanath; *A study of Kostant-Kumar modules via Littelmann paths*, Advances in Mathematics, 381:107614, 2021.
<https://doi.org/10.1016/j.aim.2021.107614>
2. Mrigendra Singh Kushwaha, K.N. Raghavan, Sankaran Viswanath; *Kostant-Kumar modules in type A*, preprint, 2020.
<https://arxiv.org/abs/1905.05302> (Sections 1-8 of this preprint have appeared as Item (1) above. Sections 9, 10 and the appendix (spanning 30 pages) will be submitted elsewhere as per referee's suggestion.)

3. Mrigendra Singh Kushwaha, K.N. Raghavan, Sankaran Viswanath; *The saturation problem for refined Littlewood-Richardson coefficients*, Séminaire Lotharingien de Combinatoire, 85B.52 (2021), 12 pp.
<https://www.mat.univie.ac.at/~slc/wpapers/FPSAC2021/52.html>
4. Mrigendra Singh Kushwaha, K.N. Raghavan, Sankaran Viswanath; *The saturation problem for refined Littlewood-Richardson coefficients*.
<https://doi.org/10.48550/arXiv.2204.03399> (This is the extended version of the conference paper in the item (3).)
5. Mrigendra Singh Kushwaha, K.N. Raghavan, Sankaran Viswanath; *New procedures to find the right Keys and the left Keys of a tableau*. (in preparation)

Teaching Experience

- Worked as TA, Course UG-102 to UG students at Indian Institute of Science, Bangalore, India, 2022.
- Teaching work, Lectured 13 classes for the course MA-386 (Coxeter groups) to UG students at Indian Institute of Science, Bangalore, India, 2022.
- Worked as TA, NPTEL online course Algebra-2, by Prof. S. Viswanath and Prof. Amritanshu Prasad, IIMSc, Chennai, India, January to April 2021.
- Worked as TA, NPTEL online course Algebra-1, by Prof. S. Viswanath and Prof. Amritanshu Prasad, IIMSc, Chennai, India, September to December 2020.
- Worked as TA, NCM Workshop on Combinatorial models in Representation Theory, IIMSc Chennai, India, 2019.
- Worked as Lecturer at Ragiv Gandhi University of Knowledge Technology, IIIT, RK Valley, Kadapa, AP, India, July 2012 to August 2015.

Conference, Invited talks

- Contributed talk, Saturation problem for w-refined Littlewood-Richardson coefficients, The 33rd international conference on Formal Power Series and Algebraic Combinatorics, Bar-Ilan University, Ramat-Gan (Israel), January 2022.
- Invited talk, A study of Kostant-Kumar modules via Littelmann paths, IIT Bombay, April 2021.

- Invited talk, Saturation for w -refined Littlewood-Richardson coefficients, Discussion meeting on Representation Theory, IISc Bangalore, India, December 2020.
- Contributed Talk, Saturation for w -refined Littlewood-Richardson coefficients, Institute Seminar Days, IMSc Chennai, November 2020.
- Lecture talk, Littlewood-Richardson coefficients, Combinatorial models in Representation Theory, NCM workshop, IMSc Chennai, November 2019.
YouTube link of this lecture:
https://www.youtube.com/watch?v=RwuTR8KVDSsc&t=4633s&ab_channel=matsciencechannel
- Contributed Talk, A paths approach to Kostant-Kumar modules, Algebras, Combinatorics and Representation Theory conference, IISER Thiruvananthapuram, December 2018.
- Contributed Talk, A paths approach to Kostant modules, Interactions of quantum affine algebras with cluster algebras, current algebras and categorification, Washington D.C. USA, June 2018.
- Seminar talk, Polynomial invariants of finite reflection groups, IMSc, Chennai, 2017.
- Seminar talk, Freudenthal's recursion formula for multiplicity of weight spaces in finite dimensional irreducible representations of semi-simple Lie algebra, IMSc, Chennai, 2016.

Workshop, Conference and School

- Volunteered, The 34th international conference on Formal Power Series and Algebraic Combinatorics, IISc Bangalore, India, July 2022.
- Conference, ALCoVE: an Algebraic Combinatorics Virtual Expedition, virtually, June 6-7, 2022.
- Conference, The 33rd international conference on Formal Power Series and Algebraic Combinatorics 2021, Bar-Ilan University, Ramat-Gan (Israel), January 2022.
- Conference, Discussion meeting on Representation Theory, IISc Bangalore, India, December 2020.
- Conference, Discussion meeting on Representation Theory, IISc Bangalore, India, December 2019.

- NCM Workshop, Combinatorial models in Representation Theory, IMSc Chennai, India, November 2019.
- Selected to participate in Research Explorer Ruhr, Research school PLUS, Ruhr University of Bochum, Germany, June 2019.
- Conference, Algebras, Combinatorics and Representation Theory, IISER Thiruvananthapuram, December 2018.
- Workshop, Combinatorial Commutative Algebra, IIT Bombay, Powai, India, 2018.
- Conference, Interactions of quantum affine algebras with cluster algebras, current algebras and categorification, Washington D.C. USA, June 2018.
- Workshop, Schubert Varieties, The Institute of Mathematical Sciences, Chennai, India, 2017.
- NCM School, Representation Theory of Finite Groups, CMI, Chennai, India, 2017.

Awards and Fellowships

CV Raman Postdoctoral Fellowship Awarded by IISc, Bangalore, 2021.

Summer Research Fellowship Awarded by Indian Academy of Sciences, Bangalore, 2012.

Junior Research Fellowship Awarded by IMSc, India, 2015.

Research Fellowship from the National Board for Higher Mathematics, India, 2015.

Junior Research Fellowship Awarded by CSIR-UGC, India, 2014.

Major areas of research interest

Lie algebras and Representation theory. The topics in which I work include: Coxeter groups, Combinatorial view of representations of finite dimensional Lie algebras and affine Kac-Moody algebra.

Other interest Computer programming languages like Python, SageMath.

References

1. Professor Sankaran Viswanath

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2. Professor K.N.Raghavan

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3. Professor Amritanshu Prasad

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4. Professor R. Venkatesh

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