A. Swaminathan
Professor
Department of Mathematics
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Fields of Research interest:

Computational Complex Analysis	—	• Positivity of trigonometric sums
	—	• Potential Theory
	—	• Geometric Function Theory
Operator Theory	—	• Orthogonal Polynomials on the Unit Circle and real line
	—	• Orthogonality of Finite Class of polynomials
Functional Analysis	—	• Zero-free and Maximal polynomials
Special Functions	—	• Geometric properties of hypergeometric type functions
	—	• Zeros, bounds and inequalities of special functions

Professional experience (Post Ph.D. period):

Position	Period - (dd.mm.yyyy)	Institution	Nature of work
Professor	19.03.2021 -	I.I.T. Roorkee, Roorkee	Research & Teaching
Associate Professor	23.10.2012 - 18.03.2021	I.I.T. Roorkee, Roorkee	Research & Teaching
Assistant Professor	03.05.2006 - 22.10.2012	I.I.T. Roorkee, Roorkee	Research & Teaching
Lecturer	10.03.2005 - 02.05.2006	Anna University, Chennai	Research & Teaching
Research Associate	24.09.2003 - 30.12.2004	I.I.T. Kharagpur, Kharagpur	Research & Teaching
Research Associate	18.05.2001 - 17.09.2003	I.I.T. Madras, Chennai	Research & Teaching

Visits abroad (selected list)

- Research Visit:
  - Katholike University, Leuven, Belgium, 02.06.2018 - 05.06.2018
  - Institute Henri Poincare, Paris, France, 06.06.2018 - 15.06.2018
  - University of Central Florida, Orlando, USA, 08.06.2015 - 24.06.2015
  - Universiti Sains Malaysia, Penang, Malaysia, 19.05.2014 - 12.07.2014.
  - Universidade Estadual Paulista, Brazil, 12.10.2013 - 27.10.2013
  - École normale supérieure de Lyon, France, 03.06.2012 - 10.06.2012.

  - Institut Henri Poincare, Paris, France, 26.05.2012 - 02.06.2012.
  - Universidad Carlos III de Madrid, Madrid, Spain, 03.03.2012 - 11.03.2012.
  - Universiti Sains Malaysia, Penang, Malaysia, 17.05.2010 - 24.06.2010.
  - Universiti Sains Malaysia, Penang, Malaysia, 18.05.2009 - 17.07.2009.
- Conferences:
  - University Warmia and Mazury in Olsztyn, Poland, 17.09.2024 - 21.09.2024
  - IMAG, University of Granada, Spain, 23.06.2024 - 27.06.2024
  - Baylor University, Texas, USA, 21.05.2022 - 29.05.2022
  - RISC, Hagenber, Linz, Austria, 22.07.2019 - 26.07.2019
  - Carlsberg Academy, University of Copenhagen, Denmark, 14.08.2018 - 17.08.2018
  - Universidad Carlos III de Madrid, Leganes, 03.07.2018 - 06.07.2018
  - Universite de Lille, Lille, France, 31.05.2018 - 01.06.2018
  - University of Kent, Canterbury, United Kingdom, 03.07.2017 - 07.07.2017
  - City University of Hong Kong, Hong Kong, 05.06.2017 - 09.06.2017
  - Paderborn University, Paderborn, Germany, 08.08.2016 - 12.08.2016
  - National Institute of Standards and Technology (NIST), Gaithersburg, Washington, 28.05.2015 - 07.06.2015
  - **I**nstituto de **C**iencias **MAT**ematicas (ICMAT), Segovia, Spain, 07.09.2014 - 12.09.2014.
  - University of Sousse, Tunisia, 25.03.2013-29.03.2013
  - Universidad Carlos III de Madrid, Madrid, Spain, 29.08.2011 - 02.09.2011.
  - American University of Sharjah, U.A.E., 18.03.2010 - 21.03.2010.
  - Asian Mathematical Society, Kuala lumpur, 22.06.2009 - 26.06.2009.
  - TC Istanbul Kultur University, Istanbul, Turkey, 20.08.2007 - 24.08.2007.
  - University of Joensuu, Finland, 13.06.2005 - 17.06.2005.

Visitors honoured (selected list)

Name	Affiliation	Period of visit
Prof. O.P. Ahuja	Kent State University, Ohio, USA	23.09.2007 - 27.09.2007
Prof. H.M. Srivastava	University of Victoria, BC, Canada	17.02.2012 - 20.02.2012.
Prof. A. Sri Ranga	UNESP, Sao Paulo, Brazil	25.03.2014 - 10.04.2014
Prof. Christian Berg	University of Copenhagen, Denmark	22.01.2015 - 26.01.2015
Prof. G.K. Srinivasan	I.I.T. Bombay, Mumbai	22.01.2015 - 26.01.2015 20.01.2019 - 26.01.2019
Prof. D. Sukumar	I.I.T. Hyderabad	11.03.2019-18.03.2019

Conferences/Short Term Courses

1. Resource person in the "TEQIP-III sponsored Short Term Course on "LATEX Programming 2019" in Department of Mathematics, NIT Jamshedpur, 08.07.2019-13.07.2019.

2. Resource person in the "Annual Foundation School I" organized by I.I.T. Delhi, supported by the National Center for Mathematics, I.I.T. Bombay and TIFR Mumbai, on the topics of Complex Analysis, in December 2017.
3. Organized the TEQIP-II sponsored Short Term Course on "Complex Analysis, Fourier Analysis and Special Functions (with outline on the Mathemtaical Software Techniques) in Department of Mathematics, I.I.T. Roorkee, 06.03.2017 - 10.03.2017.
4. Organized the "International Conference on Mathematical Analysis and its Applications", ICMAA - 2016 between November 28 - December 02, 2016, involving 170 delegates from 16 countries. Link: www.iitr.ac.in/icmaa/2016/index.html
5. Organized the AICTE sponsored QIP progrom on "Orthogonal Polynomials and Special Functions (using Mathematical Software), in I.I.T. Roorkee, 08.07.2013 - 12.07.2013.

Details of research / Consultancy project:

	Title	Funding Agency	Value (Amount)	Duration	Co-investigator	Details (& status)
1.	Positivity of Polynomial sums in Geometric Function Theory	SRIC, IITR	0.88 Lakhs	2006-2007	NIL	FIG Grant Completed
2.	Applications of hypergeometric functions in Geometric Function Theory	DST, SERC	2.03 Lakhs	2007-2010	NIL	FAST-Track Completed
3.	Recent trends in Orthogonal Polynomials and Special Functions	ASEM-Duo India 2020	4.50 Lakhs (6000 Euro)	2020-2020	Prof. Francisco Marcellan,UC3M Madrid, Spain	Travel Grant On going
4.	Spectral Properties of perturbed Orthogonal polynomials generated by rational functions and their q-analogue	DST, SERB	26.37 Lakhs	2020-2023	NIL	Core-Grant Completed
5.	Zeros of R-II type Bi-Orthogonal rational functions and corresponding numerical quadrature rules	DST, SERB	6.60 Lakhs	2020-2023	NIL	MATRICS Completed
6.	Computational Aspects in Biorthogonal Rational Functions Related to Finite Gap Jacobi Matrices, Logarithmic Capacity and their Asymptotics	NBHM, DAE	32.93 Lakhs	2021-2024	NIL	Major Grant Completed

Online activities

1. • Title: Web course on "Complex Analysis".
   • Publisher: NPTEL, IIT
   • Status: Uploaded and active online
   • URL: http://www.nptel.ac.in/courses/111107056/

Research Publications (Refereed and Science - indexed)

International Journals	:	**69**: (**Individual 8; with students 39; with collaborators 22**)
Book Chapters	:	03
National Journals	:	03
Edited Conference volume	:	02
Conference Proceedings	:	09: (International 7; National 2)

List of Publications: Published(Edited Conference Proceedings):

1. Q. Chadli, S. Das, R.N. Mohapatra and A. Swaminathan, Mathematical Analysis and Applications (MAA 2020, NIT Jamshedpur), Springer Proceedings in Mathematics and Statistics, Singapore, 2022, doi: 10.1007/978-981-16-8177-6
2. F. Marcellan, R. N. Mohapatra, S.Ponnusamy and A. Swaminathan, International Conference on Mathematical Analysis & its Applications (ICMAA 2016), J. Anal. **28** (2020), no. 1, 1–2.

List of Publications: Published(Book Chapters):

1. F. Marcellán and A. Swaminathan, Finite orthogonal Laurent polynomials, in *The mathematics of the uncertain*, 869–878, Stud. Syst. Decis. Control, 142, Springer, Cham., 2018.
2. Priyanka Sangal and A. Swaminathan, Convexity of Polynomials Using Positivity of Trigonometric Sums. in: *Madhu V., Manimaran A., Easwaramoorthy D., Kalpanapriya D., Mubashir Unnissa M. (eds) Advances in Algebra and Analysis*, 161–168, Trends in Mathematics. Birkhäuser, Cham, 2018.
3. Satwanti Devi and A. Swaminathan, Starlikeness and convexity of certain integral transforms using duality technique, *Current topics in Pure and Computational Complex Analysis*, Trends in Mathematics, Edited by M.Dorff, I. Lahiri and S.B. Joshi, Springer Verlag, 2014, 147-169.

List of Publications: Published and accepted(International Journals):

1. Vinay Shukla and A. Swaminathan, Stability of the Toda equations related to a perturbed R_I type recurrence relation, Journal of Physics (PRAMANA), Indian Academy of Sciences, Springer, 16 pages, Accepted for publication.
   impact factor: 2.25

2. Vikash Kumar and A. Swaminathan, Recovering Orthogonality from quasi-type kernel polynomials using specific spectral transformations, *Mathematical Methods in the Applied Sciences, (Wiley)*, **48** (4) (2025), No. 10568. 4649–4675. http://doi.org/10.1002/mma.10568.
3. Vikash Kumar, F. Marcellan and A. Swaminathan, Recovering orthogonality from quasi-nature spectral transformations, Bulletin of Malaysian Math. Sci. Society. **48**, (2025), Article No. **26**, 26 pp. https://doi.org/10.1007/s40840-024-01805-1
4. Vinay Shukla and A. Swaminathan, Rational Spectral transformation of continued fractions associated with R_I type recurrence relations, 29 pages, Bulletin of Malaysian Math. Sci. Society. **46**, (2023), Article No. **169**, 29 pp. https://doi.org/10.1007/s40840-023-01561-8
5. Vinay Shukla and A. Swaminathan, Spectral Properties related to generalized Complimentary Romanovski-Routh polynomials, Rev. R. Acad. Cienc. Exactas Fís. Nat. Ser. A Mat. RACSAM (**Springer**), **117** (2023), 117:78 1-22.
6. Vinay Shukla and A. Swaminathan, Chain sequences and Zeros of polynomials related to a perturbed R_{II} type recurrence relation, J. Comput. Appl. Math., Elsevier, **422** (2023) Art. No. 114916, Online First, doi: https://doi.org/10.1016/j.cam.2022.114916
7. Sourav Das and A. Swaminathan, New asymptotic expansions and Padé approximants related to the triple gamma function, J. Inequal. Appl. (Springer) **2022**, 2022:147, 12 pp.
8. Nak Eun Cho, A. Swaminathan and Lateef Ahmad Wani, Radius constants for functions associated with a limacon domain, *Journal of the Korean Mathematical Society* **59** (2022) No. 2, 353-365.
9. A. Swaminathan and Lateef Ahmad Wani, Subordination-implication problems concerning the nephroid starlikeness of analytic functions, *Mathematica Slovaca*, **72** (2022), 1185–1202.
10. A. Swaminathan and Lateef Ahmad Wani, Sufficiency for nephroid starlikeness using hypergeometric functions, *Mathematical Methods in the Applied Sciences, (Wiley)*, **45** (2022), 5388-5401. http://doi.org/10.1002/mma.8113.
11. Lateef Ahmad Wani and A. Swaminathan, Certain geometric properties of starlike functions related to a limacon domain, *Mathematics in Engineering, Science and Aerospace (MESA)*, **12** (2021), No. 2, 323–342.
12. L. A. Wani and A. Swaminathan, Starlike and convex functions associated with a nephroid domain, Bulletin of the Malaysian Mathematical Sciences Society **Springer 44** (1) (2021), 79-104.
13. L. A. Wani and A. Swaminathan, Radius problems for functions associated with a nephroid domain, Rev. R. Acad. Cienc. Exactas Fís. Nat. Ser. A Mat. RACSAM (**Springer**) **114** (2020), no. 4, Paper No. 178, 20 pp.
14. A. Swaminathan and L. A. Wani, Sufficient conditions and radii problems for a starlike class involving a differential inequality, Bulletin of the Korean Mathematical Society **57** (6), (2020) 1409–1426.
15. Sourav Das and A. Swaminathan, A harmonic mean inequality for the polygamma function, Math. Inequalities and Applications, **23** (2020) (1) 71–76.

16. L. A. Wani and A. Swaminathan, Inclusion properties of hypergeometric type functions and related integral transforms, Studia Universitatis Babeş-Bolyai Mathematica, **65** (2020), No. 2, 211–227.
17. Kiran Kumar Behera and A. Swaminathan, Biorthogonal rational functions of R_{II} type, **Proc. Amer. Math. Soc.**, **147** (7), (2019) 3061–3073.
18. Priyanka Sangal and A. Swaminathan, On generalized Cesàro stable functions, Mathematical Inequalities and Applications, **22** (1), (2019). 227–247.
19. Sourav Das and A. Swaminathan, Limit formulas related to q-Gamma and q-Digamma functions at their singularities, Journal of Combinatorics, Information & System Sciences, **44** (2019) No.1-4, 63–70.
20. Kiran Kumar Behera and A. Swaminathan, Biorthogonality and para-orthogonality of R_I polynomials, **Calcolo** (Springer), **55**(4) (2018), Art. 41, 22 pp.
21. Kiran Kumar Behera and A. Swaminathan, Orthogonal Polynomials related to g-fractions with missing terms, 22 pages, **Comp. Methods Function Theory** (Springer), **18** (2018),193–219.
22. Priyanka Sangal and A. Swaminathan, Starlikeness of Gaussian hypergeometric functions using Positivity Techniques, **Bulletin Malaysian Mathematical Sciences Society** (Springer), **41** (1) (2018), 507–521.
23. Rosihan M. Ali, Satwanti Devi and A. Swaminathan, Inclusion properties for a class of analytic functions defined by a second-order differential inequality, 14 pages, **Rev. R. Acad. Cienc. Exactas Fís. Nat. Ser. A Math. RACSAM** (Springer) **112** (2018),117–133.
24. Sourav Das, Henrik L Pedersen and A. Swaminathan, Pick Functions Related to the Triple Gamma Function, 14 pages, **J. Math. Anal. Appl.**, (Elsevier), **455**(2) (2017), 1124–1138.
25. Priyanka Sangal and A. Swaminathan, Geometric properties of Cesàro averaging operators, **Journal of Complex Analysis** (Hindawi), Article ID 6584584, (2017) 1–10.
26. Sourav Das and A. Swaminathan, Bounds for triple gamma functions and their ratios, **J. Inequal. Appl.** (Springer), **210** , (2016) 1–11.
27. Kiran Kumar Behera, A. Sri Ranga, A. Swaminathan, Orthogonal polynomials associated with complementary chain sequences, **SIGMA Symmetry Integrability Geom. Methods Appl. 12** No. 075, (2016), 1–17.
28. C.F. Bracciali, A.S. Ranga and A. Swaminathan, Para-orthogonal polynomials on the unit circle satisfying three term recurrence relation, **Applied Numerical Mathematics** (Elsevier), **109** (2016), 19–40.
29. P. Gochchayat, K. Jordaan, K. Raghavendar and A. Swaminathan, Interlacing properties and bounds for zeros of ${}_2\phi_1$ hypergeometric and little q-Jacobi polynomials, **Ramanujan Journal** (Springer), **40** (1) (2016), 45–62.
30. A. Baricz, Saiful R. Mondal, A. Swaminathan,Monotonicity properties of the Bessel-Struve kernel, **Bull. Korean Math. Soc.**, **53**(6) (2016), 1845–1856.

31. Satwanti Devi, H.M.Srivastava and A. Swaminathan, Inclusion properties of a class of functions involving Dziok-Srivastava Operator, **Korean J. Math.**,**24**(2) (2016), 139–168.
32. Satwanti Devi and A. Swaminathan, Inclusion properties of Generalized Integral Transform using Duality Techniques, **Moroccan Journal of Pure and Applied Analysis** (Springer), **2**(2) (2016), 91–106.
33. Satwanti Devi and A. Swaminathan, Application of convolution theory on non-linear integral operators, **Korean J. Math.**,**24** (3) (2016), 409–445.
34. A. Swaminathan Open problems: Pick functions, (authored by Christian Berg), **Integral Transforms and Special Functions** (Taylor and Francis), **26** (2) (2015), 90–95.
35. A. Baricz and A. Swaminathan, Mapping properties of basic hypergeometric functions, **Journal of Classical Analysis**, **5** (2) (2014), 115-128.
36. Satwanti Devi and A. Swaminathan, Integral transforms of functions to be in the Pascu class using duality techniques, **Journal of Complex Analysis** (Hindawi), Article ID 473069, (2014) 1–10.
37. R. Chandrasekhar, Rosihan M. Ali, K.G. Subramanian and A. Swaminathan Starlikeness of functions defined by third order differential inequalities and integral operators, **Abstract and Applied Analysis** (Hindawi), (2014), 723097, 1–6.
38. A. Baricz, K. Raghavendar and A. Swaminathan, Turan's type and mean inequalities for certain q-hypergeometric functions, **J. Approximation Theory** (Elsevier), **168** (2013),69–79.
39. Rosihan M. Ali, Mahnaz M. Nargesi, V. Ravichandran and A. Swaminathan, Inclusion criteria for subclasses of functions and Gronwall's inequality, **Tamsui Oxfard J. Math. Sci.**, **29** (1) (2013),61–75.
40. Saiful R. Mondal and A. Swaminathan, Stable functions and an extension of Vietoris' theorem, **Results in Mathematics** (Birkhäuser), **62** (1) (2012), 33–51.
41. K. Raghavendar and A. Swaminathan, Integral transforms of functions to be in certain class defined by the combination of starlike and convex functions, **Computers and Mathematics with Applications** (Elsevier), **63** (2012), 1296–1304.
42. Pradeep Malik and A. Swaminathan, Derivatives of a finite class of orthogonal polynomials defined on the positive real line related to inverse-gamma distribution, **Applied Mathematics and computation** (Elsevier), **218** (2012), 6251–6262.
43. K. Raghavendar and A. Swaminathan, Close-to-convexity of basic hypergeometric functions using their Taylor coefficients, **J. Math. Appl.**(Elsevier), **35** (2012), 111–125.
44. Rosihan M. Ali, Abeer O. Badghaish, V. Ravichandran and A. Swaminathan, Starlikeness of Integral Transforms and Duality, **J. Math. Anal. Appl.**(Elsevier) **385** (2012), 808–822.
45. Saiful R. Mondal and A. Swaminathan, Geometric properties of generalized Bessel functions, **Bull. Malaysian Math. Soc.** (Springer) **35**(2) (2012), 179–194.

46. Saiful R. Mondal and A. Swaminathan, On the positivity of certain trigonometric sums and their applications, **Computers and Mathematics with Applications** (Elsevier), **62** (2011), 3871–3883.
47. Pradeep Malik and A. Swaminathan, Derivatives of a finite class of orthogonal polynomials defined on the positive real line related to F-distribution, **Computers and Mathematics with Applications** (Elsevier), **61** (4) (2011), 1180–1189.
48. Rosihan M. Ali, K. G. Subramanian, See Keong Lee and A. Swaminathan, Starlikeness of Solutions to a Third-Order Differential Equation, 901235, **Abstract and Applied Analysis** (Hindawi), (2011) 1–12.
49. Rosihan M. Ali, R. Chandrashekar, S.K. Lee, V. Ravichandran and A. Swaminathan, Differential sandwich theorem for multivalent analytic functions associated with the Dziok - Srivastava operator, **Tamsui Oxfard J. Math. Sci.**, **27** (3) (2011), 327–350.
50. Rosihan M. Ali, R. Chandrashekar, S.K. Lee, V. Ravichandran and A. Swaminathan, Differential sandwich theorem for multivalent meromorphic functions associated with the Liu - Srivastava operator, **Kyungpook J. Math.**, **51** (2) (2011), 217–232.
51. A. Swaminathan, Sufficient conditions for hypergeometric functions to be in certain class of Analytic functions, **Computers and Mathematics with Applications**(Elsevier), **59** (2010), 1578–1583.
52. Saiful R. Mondal and A. Swaminathan, Geometric properties of generalized Polylogarithm, **Integral Transforms Spec. Funct.** (Taylor and Francis), **21**(9) (2010), 691–701.
53. A. Swaminathan, Univalent polynomials and fractional order differences of their coefficients, **J. Math. Anal. Appl.**(Elsevier) **353** (2009), 232–238.
54. Saiful R Mondal and A. Swaminathan, Coefficient conditions for univalency and starlikeness of analytic functions, **J. Math. Appl.**(Elsevier), **31** (2009), 79–92.
55. C. Ramachandran, S.Sivasubramanian, H.M. Srivastava and A. Swaminathan, Coefficient inequalities for certain subclasses of analytic functions and their applications involving the Owa-Srivastava operator of fractional calculus, **Math. Inequal. Appl.**, **12** (2) (2009), 351–363.
56. C. Ramachandran, H.M. Srivastava and A. Swaminathan, A unified class of K-uniformly convex functions defined by the Salagean derivative operator, **Atti Semin. Mat. Fis. Univ. Modena Reggio Emilia** , **55** (2007),1–13.
57. A. Swaminathan, Convexity of the Incomplete beta functions, **Integral Transforms and Special Functions** (Taylor and Francis), **18**(7) (2007), 521–528.
58. C. Ramachandran, T.N. Shanmugam, H.M. Srivastava and A. Swaminathan, A unified class of k-uniformly convex functions defined by the Dziok Srivastava linear operator, **Applied Mathematics and Computation** (Elsevier), **190** (2007), 1627-1636
59. A. Swaminathan,Inclusion theorems of convolution operators associated with normalized hypergeometric functions, **J. Comput. Appl. Math.**(Elsevier), **197** (1) (2006), 15-28.

60. A. Swaminathan, Sufficiency for hypergeometric functions to be associated with conic regions, **Math. Computer Modelling**(Elsevier), **44** (2006), 276–286.
61. A. Swaminathan, Certain sufficiency conditions on Gaussian hypergeometric functions, **J. Inequal. Pure Appl. Math**, **5**(4) Art., 83 (2004), 1–10.
62. A. Swaminathan, Polynomial Approximation of Outer functions, **Ann. Univ. Mariae Curie-Skłodowska Sect. A**, **58** (2004), 117–123.
63. A. Swaminathan, Hypergeometric functions in the parabolic domain, **Tamsui Oxford Journal of Mathematical Sciences** , **20**(1) (2004), 1–16.
64. R.Parvatham and A. Swaminathan, On hypergeometric transforms of certain class of Schlicht functions, **Pan American Math. J.**, **10**(2) (2000), 73–77.
65. R.Bharati, R.Parvatham and A. Swaminathan, On subclasses of Uniformly Convex Functions and corresponding class of Starlike functions, **Tamkang J. Math.**, **28**(1) (1997), 17–32.
66. R.Bharati, R.Parvatham and A. Swaminathan, On a certain class of functions of Bounded Boundary Rotation, **Yokohama math. J.**, **45** (1995), 109–115.

List of Publications: Published(National Journals):

1. C. Ramachandran and A. Swaminathan, A Unified class of convolution product of analytic functions of complex order, **Int. J. Comput. Math. Appl.**, **4** (1)(2010), 1–6.
2. A. Swaminathan, *Hypergeometric Transforms of certain class of Analytic Functions,* **Intl. Review Pure Appl. Math.**, **2** (2006), 91–98.

List of Publications: Published(International Conference Proceedings):

1. Sourav Das and A. Swaminathan, Some New inequalities for the ratio of gamma functions, M3HPCST 2015, Ghaziabad, Springer Proceedings in Mathematics and Statistics, Volume 171, Springer, Singapore, 2016, 239 – 248.
2. Sourav Das and A. Swaminathan, Higher order derivatives of R-Jacobi polynomials, ICMSS-2016, Malaysia, AIP Conference Proceedings, Vol. 1739, 020058 (2016), 8 pages. doi: 10.1063/1.4952538
3. Pradeep Malik, Saiful R. Mondal and A. Swaminathan, Fractional integration of Generalized Bessel function of the first kind, DETC2011-48950, Proceedings of the ASME 2011 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2011 August 28-31, 2011, Washington, DC, USA, 10 pages.
4. Pradeep Malik , A. Swaminathan, Fractional calculus applied to a finite class of classical orthogonal polynomials defined on the positive real line, In: **Geometric Function Theory and Applications' 2010** (Proc. of Intern. Symp., Sofia, 27-31 August 2010), IMI - Sofia, 175-180.
5. Pradeep Malik and A. Swaminathan, Riemann-Liouville Fractional calculus of certain finite class of classical orthogonal polynomials, **Conference Proceedings of the American**

Institute of Physics, Vol. 1309, 658-669, for the International Conference in Mathematical Sciences, Bolu, 23-27, November 2010.

6. Saiful R. Mondal and A. Swaminathan, Extension of stable functions and Vietoris theorem, **Proceedings of the First International Conference on Mathematics and Statistics**, Sharjah, U.A.E., March 18-21, (2010), 60-64.
7. A. Swaminathan, *Starlikeness and convexity of hypergeometric functions*, **Proceedings of GFTA 2007, Istanbul Kultur University, Turkey,** Sept. 2008, 183-196.

List of Publications: Published(National Conference Proceedings):

1. A. Swaminathan, Continued fraction expansion for certain hypergeometric functions, Proceedings of the International Conference on Mathematical Sciences, Center for Mathematical Sciences, Pala, Kerala, 1-22.
2. Pradeep Malik and A. Swaminathan, Weighted quadrature rules for certain orthogonal class of functions related to the class of Jacobi polynomials on $[0, \infty)$, Proceedings of International Conference, NIT, Rourkela, January 11-13, 2010, 232-239.

Research Supervision:(Research Students)

	Institute	Course	Name	Title of the Thesis
1.	I.I.T. Roorkee	Ph.D. (**Completed**) October 2010	Saiful Rahman Mondal	Geometric properties of hypergeometric type functions using positivity theory
2.	I.I.T. Roorkee	Ph.D. (**Completed**) March 2012	Pradeep Malik	Finite Class of Orthogonal Polynomials defined on the positive real line
3.	I.I.T. Roorkee	Ph.D. (**Completed**) August 2013	K. Raghavendar	Geometric properties of hypergeometric functions and their q-analogue
4.	I.I.T. Roorkee	Ph.D. (**Completed**) April 2015	Satwanti Devi	Geometric Properties of Integral transforms of a second order differential inequality
5.	I.I.T. Roorkee	Ph.D. (**Completed**) Sept 2017	Sourav Das	Representations and monotonic properties related to triple gamma functions
6.	I.I.T. Roorkee	Ph.D. (**Completed**) May 2018	Priyanka Sangal	Generalized Positivity techniques applied to hypergeometric type functions
7.	I.I.T. Roorkee	Ph.D. (**Completed**) Sept. 2018	Kiran Kumar Behera	Biorthogonality of R_I, R_{II} polynomials and Complementary chain sequences

	Institute	Course	Name	Title of the Thesis
8.	I.I.T. Roorkee	Ph.D. (**Completed**) October 2020	Lateef Ahmad Wani	Geometric properties of starlike functions associated with nephroid domain
9.	I.I.T. Roorkee	Ph.D. **(Completed)** (July 2023)	Vinay Shukla	Structural relations, zeros and Biorthogonality of modified R_I and R_{II} type polynomials
10.	I.I.T. Roorkee	Ph.D. (Current)	Vikash Kumar	Hypergeometric type functions in Spectral theory
11.	I.I.T. Roorkee	Ph.D. (Current)	Neha	Orthogonal polynomials in Sobolev spaces
12.	I.I.T. Roorkee	Ph.D. (Current)	Deepshikha Mishra	New Perspectives in Orthogonal Polynomials
13.	I.I.T. Roorkee	Ph.D. (Current)	Sourav Majumder	Selected topics in Operator Theory
14.	I.I.T. Roorkee	Ph.D. (Current)	Rabab Ahmad Beirkdar	Fractional Orthogonal Polynomials and Special functions
15.	I.I.T. Roorkee	Ph.D. (Current)	Suresh Krishnan K	Geometric Function Theory

Research Supervision:(Master Degree Dissertations)

	Institute	Course	Name	Year	Title of the Thesis
1.	Anna University	M.Phil.	Shobana Sharma	2006	Theory of H_p spaces
2.	I.I.T. Roorkee	M.Sc.	Sai Kumar	2007	Solution to the Dirichlet Problem - Capacity
3.	I.I.T. Roorkee	M.Sc.	Bharath Kumar	2007	Coefficient estimates in Geometric function theory
4.	I.I.T. Roorkee	M.Sc.	Natasha Sharma	2008	Spatial Domain Filtering in Image Enhancement
5.	I.I.T. Roorkee	M.Sc.	Ram Mohan Pandey	2008	Sound Recognition Model for Hearing Impaired
6.	I.I.T. Roorkee	M.C.A.	C. Selvakumar	2009	Controlling IP spoofing through inter domain packet filters
7.	I.I.T. Roorkee	M.C.A.	A. Srinivasa Rao	2010	Design and development of Network packet analyser
8.	I.I.T. Roorkee	M.C.A.	Swati Bansal	2010	Database Management for Mobile phone phone-book
9.	I.I.T. Roorkee	M.Sc.	Kiran Kumar Behera	2010	Certain algorithms on Continued fractions
10.	I.I.T. Roorkee	M.C.A.	Divya Garg	2011	End to End Automation of Patch Management Cycle

	Institute	Course	Name	Year	Title of the Thesis
11.	I.I.T. Roorkee	M.C.A.	Vipin Nande	2011	Design and Development of Subscription manager
12.	I.I.T. Roorkee	M.Sc.	Sourav Das	2012	Pick functions and Characterization of chain sequences
13.	I.I.T. Roorkee	M.C.A.	Susmita Harrow	2012	IDS architecture of IAAS based attacks on cloud
14.	I.I.T. Roorkee	M.C.A.	Naman Varshney	2012	Real time global earthquake loss estimation and visualization
15.	I.I.T. Roorkee	M.Sc.	Tarul Garg	2013	Turan type inequalities for Orthogonal Polynomials
16.	I.I.T. Roorkee	M.Sc.	Sheetal Deswal	2013	Riemann-Hilbert Problem for Orthogonal Polynomials
17.	I.I.T. Roorkee	M.Sc.	Sarita	2013	Interlacing of zeros for Orthogonal Polynomials
18.	I.I.T. Roorkee	M.Sc.	Savita	2013	Convexity and bounds for Orthogonal Polynomials
19.	I.I.T. Roorkee	M.Sc.	Venkatramana Kollati	2016	Elliptic curves & Fermat's Last Theorem
20.	I.I.T. Roorkee	M.Sc.	Anjana Deepu	2016	Numerical improvement in for Closed Newton-Cotes Formula
21.	I.I.T. Roorkee	M.Sc.	Sachin	2017	Differential equations with symmetric factors
22.	I.I.T. Roorkee	M.Sc.	Meghna Sharma Sharma	2017	Order of Solutions of Linear Differential Equations in the unit disc
23.	I.I.T. Roorkee	M.Sc.	Bipasha Pal	2017	Hankel Operator Norm on Function Spaces
24.	I.I.T. Roorkee	M.Sc. Mathematics	Anjali Sonkariya	2018	New Contiguous relations for Gauss Hypergeometric functions
25.	I.I.T. Roorkee	M.Sc. Mathematics	Devendra Rana	2018	C^* algebras: Applications in Spectral Theory & Mechanics
26.	I.I.T. Roorkee	M.Sc. Mathematics	Kiran Kunwar Chouhan	2018	Multipliers between Hardy Spaces
27.	I.I.T. Roorkee	M.Sc. Mathematics	Yashaswika Gaur	2018	Analytic functions and Continued Fractions
28.	I.I.T. Roorkee	M.Sc. Mathematics	Karan Bedi	2019	Forecasting drifting objects in the ocean using Lagrangian simulation
29.	I.I.T. Roorkee	M.Sc. Mathematics	Navita	2019	Gaussian quadrature rules corresponding to a modified Gegenbauer weight function
30.	I.I.T. Roorkee	M.Sc. Mathematics	Shreya Mehta	2020	Self adjoint Operators - classical moment problems to spectral transformations
31.	I.I.T. Roorkee	M.Sc. Mathematics	Shobhit Kumar	2020	Variability regions for Univalent functions

	Institute	Course	Name	Year	Title of the Thesis
32.	I.I.T. Roorkee	M.Sc. Mathematics	Rinku Choudhary	2020	Zeros of hypergeometric type Orthogonal polynomials and their quadrature rule
33.	I.I.T. Roorkee	M.Sc. Mathematics	Aastha Nirvanaa	2021	Dynamics of starlike and spirallike functions in geometric function theory
34.	I.I.T. Roorkee	M.Sc. Mathematics	Pragya Gupta	2021	Generation theory of one parameter Continuous semigroup of holomorphic self mappings
35.	I.I.T. Roorkee	M.Sc. Mathematics	Jaya Sharma	2022	Elliptic curves over Complex Numbers
36.	I.I.T. Roorkee	M.Sc. Mathematics	Vaneesh Jangir	2022	Ladder Operators in Orthogonal Polynomials
37.	I.I.T. Roorkee	M.Sc. Mathematics	Pradhuman Goyal	2022	Smart shipping: Mathematical Optimization for a More Efficient, Safer and De-carbonized Maritime Transport
38.	I.I.T. Roorkee	M.Sc. Mathematics	Kritik Jain	2023	Matrix Valued Gegenbauer polynomial Weight functions and their Applications in computing Moment Matrix Rank
39.	I.I.T. Roorkee	M.Sc. Mathematics	Shrishti Gupta	2024	Mathematical Optimization for Maritime routing
40.	I.I.T. Roorkee	M.Sc. Mathematics	Aryan Saxena	2024	Symmetric Polynomials Schur Polynomials and McDonald Polynomials
41.	I.I.T. Roorkee	M.Sc. Mathematics	Satyam Mandloi	2025	Mathematical modelling of football using various techniques
42.	I.I.T. Roorkee	M.Sc. Mathematics	Nandita Karmakar	2025	Location of zeroes of holomorphic functions
43.	I.I.T. Roorkee	M.Sc. Mathematics	Rakhi Rawal	2025	Location of zeroes or orthogonal Polynomials

Invited talks

1. Invited talk on "Orthogonal Polynomials to Population Dynamics through Continued Fractions" at SASTRA University, Thanjavur, on January 06, 2025.
2. Invited talk on "Geometric Properties of generalized Polylogarithm" at the International Conferecnce on Special Functions, Analytic Functions, Metrics and Quasi-conformality, ICSAMY-2024 organized by IIT Indore, between December 17-20, 2024
3. Invited talk on "Ratio of hypergeometric functions in Function spaces and Spectral properties" , at the International Conference on Special Functions and its Applications 2024, organized by the Society of Special Functions and Applications (SSFA), at Vivekananda Global University, Jaipur, India, between November 28-30, 2024.

4. Invited talk on "Ratio of hypergeometric functions in Geometric Function Theory", at the Congressio Mathematica, organized by the Poland Mathematical Society at University Warmia and Mazury in Olsztyn, Poland, between September 17-21, 2024.
5. Invited talk on "Recovering Orthogonality from the quasi-nature of spectral transformations" at the International Conference on Orthogonal Polynomials and Special Functions 2024,OPSFA-17, held at IMAG, University of Granada, Spain, between June 23-27, 2024.
6. Keynote speaker on "Ramanujan's Mathematics in Artificial Intelligence and Data Science" at the $(IC)^2$ACM-23 held at RMK College of Engineering and Technology, Chennai, India, on the occasion of Srinivasa Ramanujan's birthday, between December 22-23, 2023.
7. Plenary talk on "Continued Fractions, chain sequences and Gaussian hypergeometric functions" at the National Seminar on Recent Development in Analysis, RDARA 2023, held at University of Jammu, between May 04-06, 2023.
8. Invited talk on "Geometric properties of Ratio of hypergeometric functions in Orthogonal Polynomials and Special Functions" at the International Conference ICAMM 2023, held at PSG College of Technology, between January 04-06, 2023.
9. Invited talk on "Quasi Kernel Orthogonal Polynomials and Ratio of hypergeometric functions involving chain sequences" at Indian Mathematical Society Annual Conference 2022, held at BIT, Mesra Ranchi, December 27-30, 2022
10. Invited talk on "Ratio of hypergeometric functions in zero free approximation" at the National Mathematics Day conference ICMAC 2022, held at SSN college of Engineering, Chennai, between December 22-23, 2022
11. Invited talk "Ratio of hypergeometric functions in Geometric Function Theory", at the International Conference on Mathematical Analysis and its Applications ICMAA 2022, held at Department of Mathematics, NIT Trichy, between December 15-17, 2022
12. Invited talk "Connections between Ratio of Hypergeometric functions, Quasi Kernel Orthogonal Polynomials and Geometric properties of Special Functions" on the International conference on Special Functions and its Applications ICSFA 2022, Organized by SSFA, at Department of Mathematics, University of Mysuru, between November 26-28, 2022.
13. Invited talk on "Geometric properties of ratios of hypergeometric functions" at the VIII International Conference on Mathematics and Computer Science (ICMS-2022), Congresso-Mathematica, held at University of Reszow, Poland, between September 19-25, 2022.
14. Invited talk on "Approaching a population dynamics system through continued fractions by relating orthogonal polynomials" at ICRRMCSA 2022, held at A.M.Jain College, Chennai on September 10, 2022.
15. Invited talk on "Chain sequences and Zeros of a perturbed R_{II} type recurrence relation", at BaylorFest held at Baylor University, Texas between May 27-30, 2022
16. Invited talk on " Modified g-fractions and Gaussian hypergeometric functions at the International Webinar on Special functions and their Applications (IWSFA-2022) held at IQAC, University of Kerala, between March 21-25, 2022.

17. Invited talk on " Polylogarithms: Integral representations and polynomial mappings" at the Internationa Conference on Special Functions and its Applications- 2021 (ICSFA 2021), held at IQAC, University of Kerala, between December 22-24, 2021.
18. Invited talk on "A tour from Orthogonal polynomials to population dynamics via Continued Fractions", at the National Mathematics Day, held at SSN College of Engineering, Chennai on December 22, 2021.
19. Invited talk on "Nephroid starlikeness using hypergeometric functions" at the International Conference GFTA 2021, held at SIBIU, Romania between October 15-18, 2021.
20. Invited talk on " Applications of Routh Romanovski class of Orthogonal polynomials using Numerical integration" as a Resource Person in the AICTE FDP Refresher course , organized by Samrat Ashok Technological Institute, Vidisha, MP, India on August 23-27, 2021
21. Keynote lecture on " Routh Romanovski class of polynomials and its applications" at the Interntational conference on Science and Computing 2021, held online and organized by Vivekananda Institute of Technology, Jaipur, India under TEQIP-III program of Rajasthan Technical University on January 23, 2021.
22. Invited talk on "Theory of Continued fractions and its applications" as a Resource person in the Refresher course, Organised by Department of Mathematics, University of Jammu, held online on January 12, 2021.
23. Invited talk on " A tour from Orthogonal polynomials to population dynamics via Continued Fractions", at the International Conference on Applied Mathematical Models, held online and organized by PSG College of Technology, Coimbotore, India on January 09, 2021.
24. Invited talk on "Orthogonal Polynomials and its applications" as a Resource person in the Refresher course, Organised by Department of Mathematics, University of Jammu, held online on January 07, 2021.
25. Invited lecture on "Orthogonal polynomials associated with the perturbed chain sequences" at the International Conference on Special Functions and its Applications - 2020 (ICSFA-2020), held online and organized by Society for Special Functions and its Applications (SSFA), held on December 22, 2020.
26. Plenary lecture on "Geometric properties of analytic functions associated with Nephroid domain" in the International Conference on VI International Conference of Mathematics and Computer Science, Congressio-Mathematica, held online, organized by Department of Complex Analysis, University of Warmia and Mazury, Poland, between November 21-22 and November 28-29, 2020.
27. Plenary lecture on "Geometric properties of analytic functions associated with Nephroid domain" in the International Conference on Mathematical Analysis and Applications 2020, MAA 2020, held online, organized by Department of Mathematics, National Institute of Technology, Jamshedpur, between November 2-4, 2020.
28. Invited talk on "Opportunities of unfamiliar mathematics in Modern Technology", in the Five day TEQIP-III sponsored Faculty Development Program on Applications of Mathematical

Sciences in Engineering and Technology, organized by the Swami Keshavanand Institute of Technology, Jaipur, Rajasthan, between September 23-27, 2020.

29. Three facets of Continued fractions: Stochastic Process, Population Dynamics and Orthogonal Polynomials, in the Five day TEQIP-III sponsored Faculty Development Program organized by the Vivekananda Institute of Technology, Jaipur, Rajasthan, between September 21-25, 2020.
30. Invited talk on "Geometric properties of analytic associated with Nephroid domain", in the International Webinar on Recent Trends in Geometric Function Theory, organized by KIIT, Bhuvaneshwar, Orissa, between September 18-21, 2020.
31. Keynote lecture on "Unknown Challenges in Engineering Mathematics", in the Mathematics Webinar organized by Samrat Ashok Technological Institute, Vidisha, MP, India on September 19, 2020.
32. Invited Talk on "Orthogonal polynomials in Modern Technology", in the Five days TEQIP-III sponsored Online Conference organized by the Anand International College of Engineering, Jaipur, Rajasthan, between September 14-18, 2020.
33. Plenary lecture on "Applications of Orthogonal polynomials in Engineering problems", in the Three day TEQIP-III sponsored Online Conference organized by the Rajasthan Technical University, Kota, Rajasthan, between September 2-4, 2020.
34. Orthogonal polynomials associated with the perturbed chain sequences, at the IOPA online seminar series, organized by the research group of Prof. Ulises Fidalgo, Case Western University, Ohio, USA held online on September 01, 2020.
35. Positivity of Trigonometric Polynomials and applications to Geometric Function Theory, at the Second International Symposium on Geometric Function Theory 2019, ISGFT 2019, held at SSN College of Engineering, Chennai, between 23-24, December, 2019.
36. Extension of Stable functions and Vietoris' theorem, at the National Conference on Mathematical Analysis and Applications, NCMAA 19, held at National Institute of Technology, NIT Trichy, between 19-20, December, 2019.
37. Characterization of Pick functions by Special functions involving Recurrence Relations, at the National Conference on "Recent Advancements in Computational Mathematics and Engineering Sciences" held at Vivekananda Institute of Technology, Jaipur, between 9-10 November, 2019.
38. Duality techniques in Geometric Function Theory, at the National workshop on Applications of Geometric Function Theory and Special Functions, held at VIT University, Chennai campus on December 13, 2018
39. Structural properties of an eigenvalue problem satisfying a recurrence relation for polynomials on the unit disc, at the International Conference on Banach Algetra, Harmonic Analysis and Operator Theory, held at Sardar Patel University, Gujarat between November 20-22, 2018.
40. Biorthogonal rational functions in the unit disc, Department of Mathematics, Katholike University, Leuven, Belgium, June 04, 2018.

41. Symbolic computation - Past, Present and Future, Dehradun Institute of Technology, January 06, 2018.
42. Hypergeometric type polynomials related to zero free approximant, at the International Conference on Analysis and its Applications 2015, Aligarh Muslim University, Aligarh, on December 20, 2015.
43. Certain inequalities involving hypergeometric type functions, at the International Conference on Special Functions and its Applications 2015, Amity University, Noida, on September 10, 2015.
44. Applications of Complex Analysis in Nanotechnology, in Department of Mathematics, Yashwantrao Chavan College of Engineering, Nagpur, Maharashtra on July 13, 2015.
45. Birth and Death Process - an application of Differential Equations in real world problems, in Department of Mathematics, Yashwantrao Chavan College of Engineering, Nagpur, Maharashtra on July 13, 2015.
46. Real life applications of Differential Equations, in Department of Mathematics, Bannari Amman Institute of Technology, TamilNadu on July 6, 2015.
47. ,Results on Positivity of Trigonometric Polynomials, Department of Mathematics, University of Central Florida, Orlando, USA on June 15, 2015.
48. Plenary lecture on "Extreme points and support points in Geometric function theory", National Workshop on Geometric Function Theory and its Applications 2015, Anna University, Chennai, April 24, 2015.
49. Positivity of Trigonometric Polynomials, Anna University, Chennai, April 23, 2015.
50. Ratios of hypergeometric functions: Inequalities and Applications, International Conference on Geometric Function Theory and its applications, I.I.T. Kharagpur, 18-21, December 2014.
51. On the interlacing of zeros and related bounds for certain classes of orthogonal polynomials, International Conference on Mathematics and its Applications, College of Engineering, Villupuram, Anna University, 15-17, December 2014.
52. Pick functions and Ratios of hypergeometric type functions, International Conference on Special Functions and their Applications, ICSFA 2014, Thapar University, Patiala, India, October 16-18, 2014.
53. Turan type inequalities for Gaussian and Basic hypergeometric funtions, **School of Mathematical Sciences, Universiti Sains Malaysia, Penang, Malaysia**, June 30, 2014.
54. Minicourse on "Linearity and convexity problems in Geometric Function Theory", **School of Mathematical Sciences, Universiti Sains Malaysia, Penang, Malaysia**, June - July, 2014.
55. Turan inequalities for functions of hypergeometric type, **International Conference on Special Functions and Applications, ICSFA 2013, MNIT Jaipur**, December 13-15, 2013
56. Turan inequalities for special functions of hypergeometric type, **Department of Mathematics, Universidade Estadual Paulista, SP, Brazil**, October 24, 2013.

57. Minicourse on "Positivity of Trigonometric Polynomials", **Department of Mathematics, Universidade Estadual Paulista, SP, Brazil**, October 14-22, 2013.
58. Series of talks on "Role of hypergeometric functions in Geometric function theory", **International Workshop on Complex Analysis and Its Applications**, Walchand College of Engineering, Sangli, India, June 11-15, 2012.
59. Polynomial Approximation of Outer Functions and Zeros of the Approximants, **Unité de mathématiques pures et appliquées, École normale supérieure de Lyon, France**, June 06, 2012.
60. Pick functions, chain sequences and hypergeometric type functions, Group of Applied Mathematical Analysis, Department of Mathematics, **Universidad Carlos III de Madrid, Madrid, Spain**, March 08, 2012.
61. Role of hypergeometric functions in Geometric function theory, **National Seminar on Recent advances in Mathematics**, Brahmanand College, Kanpur, 12.02.2011.
62. Continued fraction expansion for certain hypergeometric functions, **Centre for Mathematical Sciences, Pala, Kerala** January 04, 2011.
63. Geometric properties of Generalized Polylogarithm, **School of Mathematical Sciences, Universiti Sains Malaysia, Penang, Malaysia**, June 22, 2010.
64. Series of talks on "properties of Hypergeometric functions in Geometric Function Theory", **School of Mathematical Sciences, Universiti Sains Malaysia, Penang, Malaysia**, June - July, 2009.
65. Two day workshop on the Applications of MATHEMATICA at Undergraduate Level Mathematics, Department of Mathematics, University of Delhi, New Delhi, March 26-27, 2009 (series of lectures)
66. Orthogonal polynomials and Special functions - Computational approach Centre for Professional Development in Higher Education, University of Delhi, Delhi 110 007, February 11 - 12, 2009 (series of lectures).
67. Polynomial approximation of outer functions and zeros of the Approximants, Department of Mathematics, I.I.T. Kanpur, September 29, 2005.
68. Role of Special functions in Function theory, National conference in Analysis and related topics, held in Institute of Mathematics and Applications, Orissa on May 26, 2005.

Papers Presented in International conferences

1. Biorthogonal rational functions involving two parameters and their Christoffel transformation, 15th International Conference on Orthogonal Polynomials, Special Functions and its Applicaitons (OPSFA 15), RISC, Hagenberg, Linz, Austria, July 22-26, 2019.
2. Biorthogonality of Rational functions of R_I and R_II type, International Conference on Orthogonal Polynomials and Holomorphic Dynamics, OPDS 2018, Carlsberg Academy, Copenhagen, Denmark, August 14-17, 2018.

3. Mapping properties of perturbed g-fractions from Orthogonal Polynomials, VII IberoAmerican Workshop on Orthogonal Polynomials and Applications, Universidad Carlos III de Madrid, Leganes, Spain, July 3-6, 2018,
4. On the modified parameters of Orthogonal polynomials, 14th International Symposium on Orthogonal Polynomials, Special Functions and its Applications (OPSFA 14), University of Kent, Canterbury, UK, July 3-7, 2017.
5. Pick functions and perturbation of parameters of orthogonal polynomials, International Conference on Special Functions and its Applications, ICSFA 2017, City University of Hong Kong, Hong Kong, June 5-9, 2017.
6. Orthogonal polynomials on the real line corresponding to a perturbed chain sequence, Dunkl operators, Special Functions and harmonic analysis, Conference in honour of Charles Dunkl, University of Paderborn, Germany, August 8-12, 2016
7. On Verblunsky Coefficients related to a particular class of Carathéodary functions, 13th International Symposium of Orthogonal Polynomials Special functions and Applications, 13OPSFA, National Institute of Standards and Technology (NIST), Gaithersburg, Washington, USA June 1-5, 2015.
8. A generalized class of orthogonal polynomials related to Gaussian hypergeometric functions, CRM-ICMAT workshop on Exceptional Orthogonal Polynomials and exact solutions in Mathematical Physics (XOPCONF), Segovia, Spain, September 7-12, 2014.
9. On the interlacing of zeros and related bounds for certain finite class of orthogonal polynomials, 12th International Symposium of Orthogonal Polynomials Special functions and Applications, 12OPSFA, Sousse, Tunisia, March 25-29, 2013.
10. Pick functions and chain sequences for hypergeometric type functions, 11th International Symposium of Orthogonal Polynomials Special functions and Applications, 11OPSFA, Universidad Carlos III de Madrid, Madrid, Spain, August 29 - September 02, 2011.
11. Extension of stable functions and Vietoris theorem, First International Conference on Mathematics and Statistics, American University of Sharjah, Sharjah, U.A.E., March 18-21, 2010.
12. Starlikeness and convexity of hypergeometric functions International symposium on Geometric Function theory and Applications, TC Istanbul Kultur University, Istanbul, Turkey, August $20 - 24$, 2007.
13. On Mapping properties of Basic hypergeometric series, Presented in the International Conference on "Computational Methods in Function Theory - 2005", held in University of Joensuu, Finland, during June 13-17, 2005.

Referee and Reviewer for Journals:

- **Guest Editor** Journal of Analysis, **Springer** for the Special Volume on ICMAA - 2016
- Reviewer in Zentralblatt fur mathematik and Mathematical Reviews
- Refereeing articles in various International Mathematics Journals including
  - Springer, Elsevier and Hindawi publications.

Membership:

- Member, National Academy of Sciences, India (NASI)
- Member, SIAM Activity Group (SIAG): Orthogonal Polynomials and Special Functions
- Outreach Member, Society for Industrial and Applied Mathematics (SIAM) group, USA
- Life Member, Society for Special Functions and their Applications, India
- Sponsored member, American Mathematical Society.
- Life member, the Association of Mathematics Teachers of India (AMTI)
- Fellow, Forum d' Analystes
- Member, Research Group in Mathematical Inequalities and Applications (RGMIA), Australia.

Conferences / Symposiums / Workshops organized:

- **:** TEQIP-II sponsored Short Term Course on "Complex Analysis, Fourier Analysis and Special Functions (with outline on the Mathemtaical Software Techniques)
  : Date: and Venue: 06.03.2017 - 10.03.2017, Department of Mathematics, I.I.T. Roorkee
  : Capacity: Course Coordinator
  : Resource persons: Prof. G.K.Srinivasan (I.I.T. Bombay), Prof. D. Sukumar (I.I.T. Hyderabad), Prof. Indrajit Lahiri (University of Kalyani)
- **:** International Conference on Mathematical Analysis and its Applications", ICMAA - 2016
  : Date and Venue: November 28 - December 02, 2016, I.I.T. Roorkee
  : Capacity: Convener
  : Link: www.iitr.ac.in/icmaa/2016/index.html
  : Details: involving 170 delegates from 16 countries.
- **:** AICTE sponsored QIP progrom on "Orthogonal Polynomials and Special Functions (using Mathematical Software)
  : Date and Venue: 08.07.2013 - 12.07.2013, I.I.T. Roorkee
  : Capacity: Convener
  : Resource persons: Prof. G.K. Srinivasan, I.I.T. Bombay