``CURRICULUM VITAE

Name: Dr. NISAR AHMAD RATHER.
Parentage: GH. MOHAMMAD RATHER.

Present Position:

Head ,
Department Mathematics, University of Kashmir (J&K),
Srinagar-190006. India

Institutional address:

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University of Kashmir,
Srinagar-190006, India.
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Residence Address: P-13, MAIN CAMPUS, UNIVERSITY OF

KASHMIR, HAZRATBAL, SRINAGAR-190006, INDIA.

Date of birth: 12-03-1961 **Martial status:** Married

Academic qualifications:

1 Ph. D.(1999), Extremal Properties and the Location of the Zeros of Polynomials,.

2 **M. Phil.** (1987), Some Inequalities for the Derivative of a Polynomial, Grade-A.

3. **M.Sc.** (1984) Mathematics with first class (distinction).

Teaching Experience at Postgraduate level: 20 years

Teaching Grade:

1 Received **excellent grade** for teaching (assessment made by student) from Vice-Chancellor issued by Internal Quality Assurance Cell (IQAC), University of Kashmir.

2 Certificate of Merit.

Awarded **Certificate of Merit** for Research publications in the indexed journals by Directorate of Internal Quality Assurance (DIQA), University of Kashmir.

Research experience: 18 years.

Specialization: Real and Complex Analysis (Mathematical Analysis).

Subjects Taught : Real Analysis, Complex Analysis, Differential Equations **(ODE),** Theory of Equations, Differential Calculus, Integral Calculus, Matrices.

Research Area/Interest: Analytic Theory of Polynomials

(Approximation Theory).

Research Supervision:

Approved Supervisor for guiding M. Phil/Ph.D. programmes in Mathematics

Eight M.Phil. and **Eight Ph.D** scholars guided

and

Presently supervising **three Ph. D.** scholars.

Research Publications:

Published:

1 *The location of critical points of polynomials, Asian European Journal of Mathematics, (1793-5571), 12(2018) 1950087.*

2 *On a composition preserving inequalities between polynomials, Journal of Contemporary Mathematical Analysis (1934-9416), 53 (2018), pp. 21-26*

3 *A refinement of an integral inequality for the polar derivative of a polynomial, Applied Math. E-Notes, (2018), (to appear)*

4 *Integral inequalities for the polar derivative of polynomial, Nonlinear Funct. Anal. Appl., Vol. 23(2), (2018), pp. 381-393, ISSN: 1229-1595.*

5 *New generalizations of exponential distributions with applications, Journal of probability and statistics, Hindawi publishing corporation, (2017), AID 2106748, pp.9.*

6 *Inequalities for the polar derivative of a polynomial ,Appl. Math. E-Notes, 17(2017), 231-241, ISSN: 1607-2510.*

7 *Inequalities Concerning the Polar Derivative of a Polynomial, Bull. Malays. Math. Sci. Soc., Vol. 40 (4) (2017), pp. 1691-1700, DOI 10.1007/s40840-015-0183.*

8 *Lp inequalities for the Schur-Szego composition of polynomials, Acta Math. Hungar., 151(1) (2017), pp. 124-138.*

9 *Bound for the zeros of complex-coefficient polynomials, Ann. Math. Quebec, (2017) 41:105–110, DOI 10. 1007/s40316-016-0064-8.*

10 *Inequalities involving the integrals of polynomials and their polar derivatives, journal of Classical Analysis, Vol. 8, No.1(2016), 59 – 64.*

11 Some Refinements of Enestrom-Kakeya Theorem, Southeast Asian Bulletin of Mathematics (2016) 40: 237–249

12 Zygmund-type inequalities for an operator preserving inequalities between polynomials, Khayyam J. Math. 2 (2016), no. 1, pp. 6380.

13 Some Lp inequalities concerning the polar derivative of a polynomial, Southeast Asian Bull. Math. Vol.40 (2016) . pp. 905-910.

14 Growth of polynomials not vanishing inside a disk, nonlinear Fumct. Anal. Appl., vol. 20, no. 3 (2015), pp. 479-489, ISSN: 1229-1595.

15 Rate of growth of polynomials not vanishing in a disk, Nonlinear Funct. Anal. Appl., vol. 20, no. 1(2015), pp. 97-107, ISSN: 1229-1595.

16 Some integral mean estimates for polynomials, New Zealand J. Math., vol. 44 (2014), 83-91.

17 Locations of Zeros of trinomials and quadrinomials, Journal of Mathematical Inequalities and Applications, 17 (3), (2014), 823-829.

18 On a class of probability distributions with applications using rainfall data of Kashmir valley, International journal of emerging technology and advanced engineering, vol. 3 (12) (2013), pp. 493-499.

19 On an operator preserving Lp-inequalities between polynomials, J. Mathematical Analysis and Applications, 399(2013), 422 – 432.

20 Certain compact generalization of well- known polynomial inequalities, The Australian Journal of Mathematical Analysis and Applications,10(2013), 1-16.

21 On annulus containing all the zeros of a polynomials, Applied Mathematics E-Notes, 13(2013), 155 – 159, ISSN: 1607-2510

22 New operator preserving integral inequalities between polynomials, Nonlinear Functional Analysis and Applications, 18(2013), 227-251, ISSN: 1229-1595.

23 Bounds for the zeros of a class of lacunary-type polynomials, Journal of Mathematical inequalities, 7(2013), 445-452, ISSN: 1846-579X.

24 Integral mean estimates for polynomials with restricted zeros, Inter. J. Pure and Applied Mathematics, no. 1, 89(2013), 9 - 18.

25 An Lp inequality for polynomials not vanishing in a disk, Int. J. Appl. Math., 26(2013), 171-186, ISSN: 1311-1728.

26 On an operator preserving inequalities between polynomials, Advances in Inequalities and Applications,2 (2013), 16-30.

27 On the Enestrom-Kakeya theorem, Acta Mathematica Universitatis Comenianae, (2014).

28 Location of the zeros of trinomials and quadrinomials, Mathematical. Inequalities and Applications, (2014) .

29 Some generalizations of Enestrom-Kakeya theorem, Nonlinear Functional Analysis and Applications, 18(2013), 445-451, ISSN: 1229-1595.

30 On the polar derivative of a polynomial, Matematicki Vesnik (2014).

31 New operator preserving Lp inequalities between polynomials, Advances in Inequalities and Applications, 2(2013), 31-60.

32 Some Lp-Inequalities for the B-operators, Applied Mathematics, 4(2013), No. 1, 155 – 166.

33 Some generalizations of the Enestrom-Kakeya theorem, Adv. Inequal. Appl., vol. 2,(2013), 81-91, ISSN: 2050-7461.

34 An inequality for polynomials not vanishing in a disk, Int. J. Appl. Math., vol. 26(2013), 221-231, ISSN: 1311-1728.

35 Integral mean estimates for an operator preserving inequalities between polynomials, Journal of Inequalities and Special Functions, 3(4) (2013), 24 – 41. ISSN: 2217-4303,

36 Some generalization of Enestrom-Kakeya Theorem, Advances in Inequalities and Applications,2 (2013), No. 1, 81-91.

37 An Lp inequalities for the polynomials, Nonlinear Functional Analysis and Applications, 17(2012), 119-130, ISSN: 1229-1595.

38 On the derivative of a Polynomial, Applied Mathematics, 3(2012), 746-749.

39 An Integral Inequality for Polynomials, International Journal of Mathematical Archive, 3(2012), 1996 – 2004.

40 Inequalities concerning the B-operators, International Journal of Mathematical Archive, 3(2012), 1544 – 1553.

41 Some new generalization of Zygmund type inequalities for polynomials, Math. Ineq. and Appl.,15 (2012), 469 – 486.

42 An operator preserving inequalities between polynomials, WSEAS Transactions on Mathematics, 11(2012), 383-390.

43 A remark on an integral inequality for the B-operators, Nonlinear Functional Analysis and Applications, 17(3) (2012), 383 – 396, ISSN: 1229-1595.

44 New inequalities for the B-Operators, Nonlinear Functional Analysis and Applications, 17(3) (2012), 285-300, ISSN: 1229-1595.

45 An Lp-Inequality for Polynomials, Nonlinear Functional Analysis and Applications,17(1) (2012), 119-130, ISSN: 1229-1595.

46 An inequality for the polar derivative of a Polynomial, Advances in Inequalities and Applications, 1(2012), No. 1, 33-42, ISSN: 2050-7461.

47 Extension of some polynomial inequalities to the polar derivatives, Int. J. of Applied Mathematics, 25(6) (2012), 845 – 855.

48 An integral Inequality for Polynomials, International Journal of Mathematical Archive-3(5), 2012, 1996-2004, ISSN 2229-5046.

49 Some compact generalizations of well-known inequalities for polynomials, Nonlinear Functional Analysis and Applications, 17(3) (2012), 285-300, ISSN: 1229-1595.

50 On an operator preserving inequalities between polynomials, Applied Mathematics, 3 (2012), No. 6, 557-563.

51 On the derivative of a polynomial, Applied Mathematics, 3(2012),746-749, ISSN: 2152-7385.

52 Zygmund-type inequalities for polynomials, Nonlinear Functional Analysis and Applications, 16(2011), 101-113, ISSN: 1229-1595.

53 Lp- Inequalities for Polynomials, Journal of Applied Mathematics,2 (2011), ISSN: 2152-7385.

54 Growth of Maximum Modulus of Polynomials, The South East Journal of Mathematics and Mathematical Science,10(2011), 67-72,ISSN: 0972-7752

55 Some Integral Inequalities for Polynomials, The Southeast Asian Bulletin of Mathematics, 33 (2009), 341-348,ISSN: 0972-7752.

56 Inequalities for the Derivative of a Polynomial with restricted Zeros, Nonlinear Functional Analysis and Applications, 14(2009),13-24, ISSN: 1229-1595.

57 Lq- Norm inequalities for the polar derivatives of polynomials, Mathematical Inequalities and Application, 11 (2008), 283-296.

58 Some Integral Inequalities for the Polar Derivative of a Polynomial, Mathematica Balkanica, 22(2008), 207-216, ISSN: 0205-3217.

59 Lp-Inequalities for the Polar derivative of a Polynomial, journal of Inequalities in Pure and Applied Mathematics, 9(4) (2008), ISSN: 1443-5756.

60 A Complex Analog of Cauchy Mean Value Theorem, Science for Better Tomorrow, (2008), 295-298.

61 Physical Form of The Clustering Parameter and Gravitational Galaxy Clustering, EJTP, 5(2008), 77-94, ISSN:1729-5254.

62 Some Refinements of Inequalities for the Polar Derivative of Polynomials with Restricted Zeros, International Journal of Pure and Applied Mathematics, 41(2007), 1065-1074, ISSN: 1311-8080.

63 On the Enestrom-Kakeya Theorem, International Journal of Pure and Applied Mathematics, 41(2007), 807-81, ISSN: 1311-8080

64 On an inequality concerning the polar derivative of polynomial, Proceeding Indian Acad. Sci.(Math. Sci.), 117(2007), 349 – 357, ISSN: 0253-4142.

65 A remark on generalization of Enestrom-Kakeya Theorem, Balkanica Mathematica, 21(2007), 319- 328, ISSN: 0025-5718.

66 Integral inequalities for polynomials, International Journal of Pure and Applied Mathematics, 34(2007), 55-62, ISSN: 1311-8080.

67 Some Zygmund-type Lq inequalities for polynomials, Journal of Mathematical Analysis and Applications, 289(2004),14-29,ISSN: 0022-247X.

68 Some compact generalizations of Bernstein-type inequalities for polynomials, Mathematical Inequalities and Applications, 7(2004), 393-400, ISSN: 1331-4343

69 Inequalities for the polar derivative of a polynomial with restricted zeros, Mathematica Balkanica, 17(2003), 15- 28, ISSN: 0205-3217.

70 New integral mean estimates for polynomials, Proc. Indian Acad. Sci. (Math. Sci.), 109(1999), 65-74.

71 Growth of maximum modulus of rational functions with prescribed poles. J. Math Ineq Appl.,2(1999), 65-173,ISSN: 1331-4343.

72 Some compact generalizations of Zygmund-Type inequalities for Polynomials, Non-Linear Studies,6(1999), 241-255, ISSN: 1359-8678.

73 On an inequality of S. Bernstein and Gauss-Lucas Theorem, Analytic and Geometric inequalities and Applications, Kluwer Acad. Pub., (1999), 29-35, ISBN: 978-0-7923-5690-5

74 New Lq- inequalities for polynomials, J. Math. Ineq. Appl., 2(1998), 177-191, ISSN: 1331-4343.

75 A Refinement of a theorem of Paul Turan concerning polynomials, J. Math. Ineq. Appl., 1(1998), 231-238, ISSN: 1331-4343

76 Inequalities for the derivative of a polynomial, Proc. Indian Acad. Sci., 107(1997), 189-196, ISSN: 0253-4142.

77 Lp- inequalities for polynomials, Glasnik Mathematicki, 32(1997), 39-43, ISSN: 0017-095X.

78 A Compact generalization of Walsh's Two circle Theorems for polynomials and rational functions, Indian J. Pure and Appl. Math., 27(1996), 785-790, ISSN: 0019-5588.

79 Integral Mean Estimates for Polynomials whose zeros are within a circle, Glasnik Mathematicka, 31(1996), 229- 237, ISSN:0017-095X.

80 Refinements of Gaussian tail inequality, Asian Journal of probability and statistics (to appear)

Books Published:

- *Complex Trigonometry* (2005), K.Sons, India.
- *Theory of Equations* (2013), K.Sons, India.
- *A Text Book of Matrices* (2013), KBD, India.

Workshop/Conferences/Seminars Attende d:

1 Attended workshop on “Review of Mathematics and Statistics Curriculum” at +2 stages Conducted by Curriculum Development and Research Wing of J and K Board at P.G. Department of Mathematics and Statistics, University of Kashmir, Srinagar from 19th July to 27th July, 1999.

2 Attended workshop on Review of Mathematics Curriculum at secondary level organized by J&K Board in collaboration with Department of Mathematics at Kashmir University, june3rd –June 6, 2005.

3 Attended the 16th annual Conference of Jammu Mathematical Society held at the University of Jammu, Jammu on March 1, 2006 and delivered a talk in the conference.

4 Attended 4th JK Science Congress organized by Kashmir University in collaboration with DST GOI in 2008 and presented a paper.

5 Attended International Congress on Industrial and Applied Mathematics at the Jammu University, Jammu (March 31st –April 3, 2007).

6 Attended 8th Conference of Indian Society of Industrial and Applied Mathematics at the Jammu University, Jammu (March 31st-April 3), 2007.

7 Attended 17th Annual Conference of Jammu Mathematical Society and presented a paper in the Conference at the Jammu University, Jammu (March 31st-April 3, 2007).

8 Attended 6th JK Science Congress at Kashmir University and presented a paper (2010).

9 Attended International Conference on Differential Geometry, Functional Analysis and Applications at JMI and presented a paper(8 – 10th , Sept, 2012).

10. Attended 9th JK Science Congress and Regional science Congress at Kashmir University and presented a paper (2013).

As a Resource person:

1. Acted as Resource Person in Refresher Course conducted by the Director, State Education Department, Govt. of J&K in collaboration with PG Department of Mathematics, University of Kashmir from May 1st – May 9, 2002.
2. Acting as Resource Person during various Refresher course conducted by the Academic Staff College (ASC), University of Kashmir, Srinagar in collaboration with PG Department of Mathematics, University of Kashmir, Srinagar.
3. Acting as regular Resource Person for the Department of Statistics and B Pharmacy, University of Kashmir in their Academic Programme of Masters as well as Bachelors level.
4. Acted as Resource Person in Interactive Programme organized by Doordarshan Kendra Srinagar regarding the Mathematics at secondary school level. The programme was televised live on 19th September, 2007.

5 Acted as Resource Person/Expert during Three-Day Workshop on “Development of Mathematical Curriculum for Intermediate Level” organized by J&K Board of School Education (2004).

6 Acting as resource Person/Reviewer of Mathematical books authored by different person. The books are referred to on regular basis for reviewing and after reviewing/suggesting the necessary changes the books are recommended for final publication by J&K Board of School Education.

7 Acting as Referee for Journal of Complex Analysis and Operator Theory and Indian Journal of Pure and Applied Mathematics, Journal of Mathematical Inequalities, Mathematical inequalities and Applications, Journal of Applied Mathematics.

8 Acting as reviewer for Journal of Mathematical Analysis and Application.

9 As a convener, organized nine days workshop on Non Linear Functional Analysis and its Applications (NFAA) during 21–29thoct., 2013 in collaboration with IIT, Bombay supported by DST Government of India.

10 Reviewer for American Mathematical Society(AMS).

Training/Courses:

1 Attended UGC sponsored Refresher Course organized by the Academic Staff College, The University of Kashmir, Srinagar in Kashmir from July 2-June 22,

1997.collaboration with the Department of Mathematics, University of

2 Attended UGC sponsored General Orientation Course organized by Academic Staff College, The University of Kashmir, Srinagar held from June 6-July 5,2003.

Membership:

1. Member, Board of Undergraduate Studies in Mathematics, University of Kashmir, Srinagar.
2. Member, Board of Postgraduate Studies in Mathematics, University of Kashmir, Srinagar.
3. Member, Board of Undergraduate Studies in Statistics, University of Kashmir, Srinagar.
4. Member, Board of Postgraduate Studies in Statistics, University of Kashmir, Srinagar.
5. Member, Board of Studies in B Pharmacy, University of Kashmir, Srinagar and guest faculty member of the department from last 10 years.
6. Member of Central purchase Committee, University of Kashmir.
7. Member of Board of Sports, University of Kashmir.
8. Member of Kashmir Mathematical Society, Kashmir.
9. Member of Board of Undergraduate and Postgraduate studies in physical education, University of Kashmir.
10. Member J&K Cricket Association(affiliated unit of BCCI).
11. Member Board of Under Graduate Studies in Business and Financial Studies, 2010, University of Kashmir.

12. Member of Board of Post Graduate Studies in Physics, University of Kashmir.
13. Member of Academic Council, University of Kashmir.
14. Member of University Council, University of Kashmir.

Administrative Positions held :

1 Dean, Faculty of Physical and Material Sciences, University of Kashmir.
2 Head Department of Mathematics, University of Kashmir.
3 Head Department of Physical Education, University of Kashmir.
4 Director Sports, University of Kashmir.
5 Director Environment and Hygiene, University of Kashmir.
6 Chief Proctor, University of Kashmir.
7 Chairman Estates, University of Kashmir.
8 Chairman Allotment Committee.

Work Plan

Presently engaged with research programs for guiding research scholars leading to pre doctorate and doctorate degrees in **mathematics.** The topics of the these projects pertain to **Analytic Theory of Polynomials** where in main focus is on the

i) **Location of the zeros of polynomials with restricted coefficients,(Solution of equations)**

ii) **Bound for the maximum modulus of the derivative of a polynomial,(Extremal Properties)**

iii) **Operator preserving inequalities between polynomials**,

iv) **Lp – inequalities for polynomials.**

Polynomials pervade mathematics, and much that is beautiful in mathematics is related to the polynomials. Virtually every branch of mathematics from Algebra, Number theory and Algebraic geometry to applied analysis, Fourier analysis, and Computer science, has its corpus of theory arising from study of polynomials. Historically, questions related to polynomials, for example, the solution of polynomial equations, gave rise to some of the most important problems of the day. The subject is now too large to attempt an encyclopedic coverage.

The subject ***Analytic Theory of Polynomials Equations*** *dates from about the time when the geometric representation of complex numbers was introduced into mathematics. The first contributors to the subject were Gauss and Cauchy. Incidental to his proof of Fundamental Theorem of Algebra, Gauss showed that the polynomial P(z) has no zeros outside a circle. Cauchy also added much of the value to the subject. About 1829 he derived for the moduli of the zeros of a polynomial more exact bounds than that of Gauss.*

Traditionally, polynomials were objects of algebra. They were considered as algebraic expressions in an

unknown, and their zeros were seen as roots of an equation. Until the early part of twentieth century, results on zeros and critical points, such as the Gauss- Lucas theorem, the Budan-Fourier theorem, and Cauchy's index theorem, were included in books on algebra despite the fact that these theorems are of an analytic nature.

Independently, in the second half of the nineteenth century, polynomial attracted interest as functions of a special kind with excellent analytic properties. P. L. Chebyshev 1853 may have been the first to study extremal properties of polynomials, more than thirty years before K. Weierstrass in 1855 established his famous approximation theorem which underlined the importance of polynomials as objects of analysis. Extremal properties, such as inequalities of Markov and Bernstein-type are fundamental for the proofs of many inverse theorems in polynomial approximation theory. Frequently further progress in inverse theorems has depended on first obtaining a corresponding generalization or analogues of Markov's and Bernstein's inequalities. There are many results on Markov's and Bernstein's theorems and their generalization.

Study of zeros (Numerical methods), critical points, inequalities concerning the maximum modulus of polynomial and their derivatives on a disk are of practical importance in formulation of stability criteria of physical systems. Studies in properties of polynomials is of great interest for researchers, particularly in applied sciences (Engineering, Computer sciences, physics, chemistry

etc.). In view of many interesting and unsettled problems, this subject continues in active state of research.

Dr. NISAR AHMAD RATHER.