

## CURRICULUM VITAE

### **RAM N. MOHAPATRA**

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**Present Rank:** Professor

**Tenure:** Yes

**Areas of Specialization:** Approximation Theory, Topological Vector space of sequences, Summability, Variational Inequality, Differential Equations, Fourier Analysis and Wavelets & Frames, Fluid Mechanics

### **Degrees and Scholarship:**

<u>University</u>	<u>Degree</u>	<u>Year</u>	<u>Discipline</u>
Utkal University, India	B.Sc.	1961	Honors in Mathematics
Utkal University, India	M.Sc.	1963	Mathematics
University of Jabalpur, India	Ph.D.	1968	Mathematics

### **Courses Taught:**

**Graduate:** Fourier Analysis, First course in Functional Analysis, Operator Theory, Complex Analysis, Second Course in Complex Function Theory, Measure and Integration, Theory of approximation of Functions, Approximation Techniques, Spline Functions and Their Approximation Properties, Splines and data fitting, Harmonic Analysis on Locally Compact Groups, Theory of Probability, Advanced Multivariate Calculus, Special Functions, Methods of Mathematical Analysis, Applied Mathematics I and Applied Mathematics II, Foundations of Analysis, Applied Numerical Analysis, Advanced Linear Algebra, Post Secondary Mathematics Instruction, Wavelets as a tool for signal processing, Special Functions, Mathematical Modeling, Hilbert Spaces, Advanced Mathematics For Engineers, Riemann Surfaces.

**Undergraduate:** Mathematical Modeling, Introduction to Fractals, Chaos and Dynamics, Introduction to Systems Modeling and Simulations, Pattern, Similarity and Complexity in Nature, Basic Calculus Sequence, Freshman Mathematics, Mathematics of Finance, Linear Algebra I, Linear Algebra II, Abstract Algebra,

Ordinary Differential Equations, Theory of Ordinary Differential Equations, Partial Differential Equations, Analysis I, Analysis II, Theory of Functions of a Complex Variable, Linear Operators on a Hilbert Space, Programming Languages - Fortran, Basic and Cobol, Statistics for Social Sciences, Statistics for Business Students I and II, Mathematical Statistics, Statistical Inference, Engineering Mathematics I and II, Number Theory, Finite Mathematics, College Algebra, College Trigonometry, Business Calculus, Technical Calculus, Calculus for Biology, Trigonometry with lap top computer, Logic and Proof, Pre-Calculus Algebra, History of Mathematics, Modern Geometry.

**Administrative Experience:**

Chairman, Department of Mathematics, American University of Beirut, 1978-1981

Graduate Program Coordinator, Department of Mathematics, University of Central Florida : July 2001 to December 2006.

**Academic Appointments and Positions:**

Regional College of Education Bhubaneswar, India	Lecturer	1967-1969
Sambalpur University, Postgraduate Department of Mathematics, India	Lecturer	1969-71
American University of Beirut, Beirut, Lebanon	Assistant Professor	1971-75
University of Arkansas Fayetteville, Arkansas	Visiting Professor	Summer 1971
American University of Beirut	Associate Professor	1975-1980
University of Alberta Edmonton, Alberta, Canada	Research Associate	1976-77
University of Calgary Calgary, Canada	Research Associate	Summer 1977 Summer 1978
University of Calgary	Visiting Member	Summer 1980
Tata Institute of Fundamental Research, Center for Applied Mathematics, Bangalore, India	Visiting Professor	Summer 1981
American University of Beirut	Professor	1980-1983
Utkal University, India	Visiting Professor	Summer 1982
York University, Downsview, Ontario, Canada (On leave from AUB)	Visiting Professor	1983-84
University of Central Florida	Associate Professor	1984-1986
	Professor	1986 - present

**Teacher Training Experience and evaluation of Public School Program:**

- Took part in Reading Advanced Placement AB Calculus reading in Kansas city during summers 2009, 2010 & 2012.
- Taught Linear Algebra during Fall 2013 to Elaine Lin, a student of 11<sup>th</sup> grade in Seminole High School as a part of her IB Further Mathematics Program.
- Teaching Advanced Calculus to Elaine Lin, a student of 11<sup>th</sup> grade in Seminole High School as a part of her IB Further Mathematics Program.
- Tutoring every Tuesday to 11 8<sup>th</sup> Grade students of Jackson Middle School, Orange County, Florida in 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> periods.
- In 2007 and 2008, I was invited to speak at the Advanced Placement workshop for teachers .
- Delivered two one hour lectures in August 2007 and August 2008 to High School teachers of Orange County , Florida entitled “Triumphs of Mathematics” integrating History of Mathematics with new directions in Mathematics.
- Helped five teachers in Stonewall Jackson Middle School, Orange County, FL to prepare for the Mathematics part of their certification examination.
- Conducted teacher training workshop for Middle and Elementary school teachers of Orange County, Florida (under the Orlando SMART program) for the years 2005 and 2006.
- Delivered a lecture to 21 High School teachers of Orange County, Florida, on “How to Make Challenging problems that combines multiple concepts?”
- Conducted workshops for IB teachers in Europe, Introductory workshop for schools to apply for IB Diploma, North America and South America from 1995 - present.
- Evaluator of the K-12, East Brunswick Public School system in collaboration with Dr. Douglas Brumbaugh, May 1993.
- Taught Topics in College Algebra for Seminole County for add-on-certification in 1991.
- Participated in the teaching of the in-service course in Statistics as a consultant to teachers of Seminole County, Florida in 1989.
- Taught in-service course in Mathematical Modelling for teachers of Orange County, Florida in 1988 in collaboration with Professors Howard Sherwood and Joby Anthony.
- Taught in-service course in Algebra II for Secondary School teachers of Orange County at Winter Park High School in 1989.
- Taught Linear Algebra for teachers at the Summer Institute for Secondary School teachers held at the University of Arkansas, Fayetteville, Arkansas, in 1971.
- Taught Algebra, Geometry, and the Structure of the Real number system to Secondary School teachers in Summer Science Institutes in India from 1965-1970.

- Helped students of Jackson Middle School twice a week by tutoring targeted students, 2015 school year.
- Helped Ms. Jacobson, the Second grade teacher at Lawton Elementary School in spring, 2015 by teaching Fibonacci sequence, Graph coloring, and congruence of geometric figures in two or three dimensions.
- Helped Seventh Grade Algebra teacher of Jackson Middle School in her Algebra class once a week for three hours each day during 2015-2016 academic year.
- Helped Eighth Grade Geometry Honors, teacher of Jackson Middle School, twice a week (three class periods each day) during January to May, 2017.
- Helped Jackson Middle School students in their Saturday School for preparing for FCAT and similar examinations during Spring 2015, 2016 and 2017.

### **Research Experience and Accomplishments:**

#### **Areas of interest**

Absolute Summability of Infinite Series.

Fourier Series, Integrals, and wavelet transforms.

Topological Vector Space of Sequences and Inequalities in Solid Normed Spaces.

Theory of Approximation including Spline functions.

Differential Equations

Fuzzy sets and Fuzzy Differential Equations

Variational Inequalities

Frame Theory

#### **Book Published and under progress:**

1. M.H. Regier, R.N. Mohapatra, and S.N. Mohapatra, Biomedical Statistics with Computing. Research Studies Press (U.K.) and John Wiley and Sons, 1982.
2. V. Lakshmikantham and R.N. Mohapatra, Theory of Fuzzy Differential Equations and Inclusions, Taylor Francis, 2003
3. N.K. Govil, R.N. Mohapatra, Z. Nashed, A.K. Sharma, and J. Szabados, Approximation Theory: in memory of A.K. Varma, Marcel Dekker, 1998 (Edited volume).
4. N. K. Govil, H. Mhaskar, R. N. Mohapatra, Z. Nashed, J. Szabados, Frontiers of Interpolation and Approximation in memory of Professor Sharma, published by Taylor Francis with an imprint of Chapman & Hall., July 2006 (Edited Volume)
5. Ram N. Mohapatra, Debasis Giri, P.K. Saxena, P. D. Srivastava, Mathematics and Computing 2013, International Conference in

- Haldia, India, Springer Proceedings in Mathematics and Statistics Vol.91, Springer, India, 2014 (Edited Volume)
6. Ram N. Mohapatra, Dipanwita Roy Chowdhury, Debasis Giri, Mathematics and Computing 2015 (Proceedings of the International Conference held in Haldia, India, in January, 2015) Springer Proceedings in Mathematics and Statistics Vol. 139, Springer, India , 2015 (Edited Volume)
  7. P.N. Agrawal, R.N. Mohapatra Uday Singh H.M. Srivastava, Mathematical Analysis and its Applications (Proceedings of the International Conference held in IIT Roorkee in December 2014) Springer Proceedings in Mathematics and Statistics vol. 143, Springer, India, 2015, (Edited volume)
  8. N. K. Govil, R. N. Mohapatra, M. A. Qazi, Gerhard Schmeisser, Progress in Approximation Theory and Applicable Complex Analysis - in memory of Q. I. Rahman", Springer Optimization and its Applications, volume 117, 2017. (Edited Volume)
  9. Debasis Giri, Ram N. Mohapatra, M.S. Obidat, Heinrich Begehr, Proceedings of ICMC 2017 held in the Haldia Institute of Technology, Haldia, India from January 19 to January 21, 2017, Springer series in Communications in Computer and Information Science (CCIS).volume 665. (Edited Volume), 2017

## 1. Research Publications:

### a) In Refereed Journals

#### Summability of infinite Series

1. V.P. Srivastava, R.N. Mohapatra and G. Das, On  $|R, \log n, |$  Summability Factors of a Power Series on its Circle of Convergence, *Math. Zeitschr.* **90** (1965), 319-324.
2. R.N. Mohapatra, On Absolute Convergence Factors, *Rend. Circ. Mat. Palermo* **16** (1967), 259-274.
3. R.N. Mohapatra, A Note on Summability Factors, *J. Indian Math. Soc.* **31** (1967), 213-224.
4. G. Das, V.P. Srivastava and R.N. Mohapatra, On Absolute Summability Factors of Infinite Series, *J. Indian Math. Soc.* **31** (1967), 189-200.
5. R.N. Mohapatra, G. Das and V.P. Srivastava, On Absolute Summability Factors of Infinite Series and their Application to Fourier Series, *Proc. Cambridge Phil. Soc.* **63** (1967), 107-118.
6. R.N. Mohapatra, On Absolute Summability Factors of Infinite Series, *J. Indian Math. Soc.* **32** (1968), 113-129.
7. R.N. Mohapatra, On Absolute Norlund Summability Factors, *Rendiconti di Matematica* **4** (1971), 449-458.
8. R.N. Mohapatra, On Absolute Summability Factors, *Tamkang J. Math.* **4** (1973), 35-44.
9. R.N. Mohapatra and G. Das, Summability Factors for Lower-semi-matrix Transformations *Monatshefte fur Math.* **79** (1975), 307-315.

10. R.N. Mohapatra and G. Das, Absolute Summability Factors II, *Tamkang J. Math.* **9** (1978), 157-171.
11. G. Das and R.N. Mohapatra, Absolute Summability Factors of Infinite Series Involving Norlund Means, *Nanta Mathematica* **12** (1979), 94-101.
12. R. N. Mohapatra, M. A. Sarigol, On the Matrix Transformations of Absolute Summability Fields of Weighted Mean Matrices, Submitted for publication.

### **Fourier Analysis**

1. R.N. Mohapatra, A Note on Fourier Constants, *Journal of Mathematics (Jabalpur)* **1** (1965), 43-46.
2. R.N. Mohapatra, Summability Factors for Riesz Logarithmic Means of Order One for a Fourier Series, *Proc. Cambridge Phil. Soc.* **67** (1970), 307-320.
3. R.N. Mohapatra, Note on Absolute Summability Factors of a Fourier Series, *Rendiconti di Matematica* **4** (1971), 1-15.
4. R.N. Mohapatra, On Local Properties of Differentiated Series of a Fourier Series, *J. London Math. Soc.* **4** (1971), 314-318.
5. R.N. Mohapatra, Note on Summability (L) of Fourier Integrals, *Colloq. Math.* **28** (1973), 291-297.
6. G. Das and R.N. Mohapatra, The Non-absolute Norlund Summability of Fourier Series, *Pacific J. Math.* **51** (1974), 49-55.
7. Prem Chandra and R.N. Mohapatra, On Absolute Norlund Summability Factors of a Fourier Series, *Tamkang J. Math.* **10** (1979), 245-252.
8. Prem Chandra and R.N. Mohapatra, On Absolute Summability Factors of Infinite Series and Their Application to Fourier Series, *Rendiconti di Matematica* **13** (1980), 21-28.
9. R.N. Mohapatra and G. Das, Inclusion Theorems for Summability Factors, *Math. Japonica.* **26** (1981), 607-612.
10. Prem Chandra, R.N. Mohapatra and B.N. Sahney, On  $(J, p_n)$  Summability of Fourier Series, *Tamkang J. Math.* **16** (1985), 37-41.
11. Huseyin Bor and Ram N. Mohapatra, A New Result on Generalized Absolute Cesaro Summability, *International Journal of Analysis*, 11, No 1 (2016), 40-42.

### **Solid normed sequence spaces and inequalities**

1. P.D. Johnson, Jr. and R.N. Mohapatra, A Hardy-Davies-Petresen's Inequality for a Class of Matrices, *Canad. J. of Math.* **30** (1978), 458-465.
2. P.D. Johnson, Jr. and R.N. Mohapatra, Density of Finitely Non-Zero Sequences in Some Sequence Spaces, *Math. Japonica.* **24** (1979), 253-262.

3. P.D. Johnson, Jr. and R.N. Mohapatra, Sectional Convergence in Spaces Obtained as Inverse Images of Sequence Spaces Under Matrix Transformations, *Math. Japonica.* **24** (1979), 179-185.
4. R.N. Mohapatra and G. Das, On Some Sequence to Function Transformations, *Mathematica: Journal L'Analyse Numerique la Theorie de l'approximation (Romania)* **9** (1980), 233-243.
5. P.D. Johnson, Jr. and R.N. Mohapatra, Inequalities Involving Lower-Triangular Matrices, *Proc. London Math. Soc.* **41**(1980), 83-137.
6. P.D. Johnson, Jr. and R.N. Mohapatra, Best Possible Results in a Class of Inequalities, *Pacific J. Math.* **103** (1982), 433-436.
7. P.D. Johnson Jr. and R.N. Mohapatra, The Maximal Normal Subspace of the Inverse Image of a Normal Space of Sequences by a Non-negative Matrix Transformation, *Ann. Math. Polonici* **45** (1985), 105-120.
8. R.N. Mohapatra and D.C. Russell, Integral Inequalities Related to Hardy's, *Aequationes Math* **28** (1985), 199-207.
9. R.N. Mohapatra and K. Vajravelu, Integral Inequalities Related to Copson's Inequality, *Austral. J. of Math.* **48** (1989), 124-132.
10. P.D. Johnson, Jr. and R.N. Mohapatra, On an Analogue of Hardy's Inequality, *Arch. Math.* **60** (1993) 157-163.
11. P.D. Johnson, Jr., and R.N. Mohapatra, Best Possible Results for a Class of Inequalities II, *Jour. Math. Anal. and Appl.*, **188** (1994), 752-758
12. R.N. Mohapatra, David Ross and Frank Salzmann, Norm Inequalities which Yield Inclusion for Euler Sequence Spaces, *Computers Math. Appl.* **30** (1995), 383-387.
13. P.D. Johnson, R.N. Mohapatra and David Ross, Bounds for the operator norms of some Nörlund Matrices, *Proc. Amer. Math. Soc.*, **124** (1996), 543-547.
14. Xin Li and R.N. Mohapatra, Extended Means as weighted Means, Proceedings of the Royal Society of London, Ser. A., 457 ((2001)1273 – 1275).
15. R.N. Mohapatra and Frank Salzmann, On a result of Leindler, *Mathematical Inequalities and Applications*, 5 (2002), 39 – 43.
16. Xin Li, R.N. Mohapatra, and R.S. Rodriguez, Grüss-type inequalities and best approximation, *Jour. Math. Anal. and Appl.*, 267 (2002), 434-443.
17. R. N. Mohapatra, Inequalities involving Convex Functions, *J. Orissa Math. Soc.* 27 (2008) 1-12.
18. Holly Carley, P.D. Johnson and R. N. Mohapatra, Unifying inequalities of Hardy, Copson, and others", *Aequationes Mathematicae* 89 (2015), 497-510

### **Theory of Approximation and Splines**

1. R.N. Mohapatra, Quantitative Results on the Degree of Almost Convergence of a Sequence of Positive Linear Operators, *J. Approx. Theory* **20** (1977), 239-250.

2. R.N. Mohapatra, A Note on Approximation of Continuous Functions by a Generalized Szasz Operator, *Nanta Mathematica* **10** (1977), 181-184.
3. R.N. Mohapatra and A. Sharma, Convergence of Discrete Spline Interpolants Without Mesh Ratio Restrictions, *Indian J. Math.* **20** (1978), 161-172.
4. R.N. Mohapatra and A. Sharma, Discrete Exponential Abel-Euler Splines, (*MRC Report No. 1746, Madison, Wisconsin*) *J. Indian Math. Soc.* **42** (1978), 367-379.
5. R. N. Mohapatra and B. N. Sahney, Approximation by a Class of Linear Operators Involving a Lower Triangular Matrix, *Studia Sci. Math. Hungar.* **14** (1979), 87-94.
6. R. N. Mohapatra and B. N. Sahney, Approximation of Continuous Functions by Their Fourier Series, *Mathematica: Journal L'Analyse Numerique la Theorie de l'approximation* **10** (1981), 81-87.
7. R. N. Mohapatra, Absolute Cesaro Summability of Successively Derived Series of a Fourier Series of a Function of Class  $L_p$  ( $p > 1$ ), *Indian J. Pure Appl. Math.* **12** (1981), 1250-1259.
8. R. N. Mohapatra and Prem Chandra, Holder Continuous Functions and Their Euler, Borel and Taylor Means, *Math. Chronicle (New Zealand)* **11** (1982), 81-96.
9. R. N. Mohapatra and Prem Chandra, Degree of Approximation of Functions in the Holder Metric, *Acta Math. Hungar.* **41** (1983), 67-76.
10. R. N. Mohapatra and D. C. Russell, Some Direct and Inverse Theorems in Approximation of Functions, *J. Austral. Math. Soc. Ser. A* **34** (1983), 143-154.
11. A. S. B. Holland, R. N. Mohapatra and B. N. Sahney,  $L_p$  Approximation of Functions by Euler Means, *Rendiconti di Matematica (Rome)* (2), **3** (1983), 341-355.
12. B. Kuttner, R. N. Mohapatra and B. N. Sahney, Saturation Results for a Class of Linear Operators, *Math. Proceedings of Camb. Phil. Soc.* **94** (1983), 133-148.
13. A. S. B. Holland, R. N. Mohapatra and B. N. Sahney, Functions of class  $Lip(\alpha, p)$  and Their Taylor Mean, *J. Approx. Theory* **45** (1985), 111-122.
14. R. N. Mohapatra, P. J. O'Hara and R. Rodriguez, Extremal Polynomials for Weighted Markov Inequalities, *J. Approx. Theory* **51** (1987), 267-273.
15. R. N. Mohapatra, P. J. O'Hara and R. Rodriguez, Simple Proofs of Bernstein - Type Inequalities, *Proceedings of American Math. Soc.* **102** (1988), 629-631.
16. R. N. Mohapatra and Prem Chandra, Approximation of Functions by  $(J, q, n)$  Means of Their Fourier Series, *J. Approx. Theory Appl.* **4** (1988), 49-54.
17. R. N. Mohapatra, Degree of Approximation of Holder Continuous Functions, *Math. Nachr.* **140** (1988), 91-96.
18. Elias Deeba, R. N. Mohapatra and R. S. Rodriguez, On the Degree of Approximation of Some Singular Integrals, *Rendiconti di Matematica* **8** (1988), 345-355.



19. R. N. Mohapatra and R. S. Rodriguez, Degree of Approximation of Some Singular Integrals in the Holder Metric, *Math. Nachr.* **149** (1990), 117-124
20. Ram Verma and R.N.Mohapatra, Application of Numerical Range to Approximation, Solvability of Nonlinear Functional Equations, *Pan American Math. Jour.* **1** (1991), 46-54.
21. R. N. Mohapatra, P. J. O'Hara and R. Rodriguez, An Extremal Problem Concerning Finite Dimensional Subspaces of  $C[a,b]$ , *J. Austral. Math. Soc. Ser. B*, 34 (1992), 35-42.
22. Xin. Li and R. N.Mohapatra, On the Divergence of Lagrange Interpolation with equidistant Nodes, *Proc. American Math. Soc.*, **118** (1993), 1205-1212.
23. Xin. Li, R. N.Mohapatra and R. S. Rodriguez, On Markov's Inequality on  $\mathbb{R}$  for the Hermite Weight, *Journal of Approx. Theory*, 75 (1993), 115-129.
24. Xin Li, R.N. Mohapatra and R.S. Rodriguez, Bernstein-Type Inequalities for Rational Functions with Prescribed Poles, to appear in *Jour. London Math. Soc.* 51 (1995), 523 – 531.
25. Roy Jones, Xin Li, R.N. Mohapatra and R.S. Rodriguez, On the Bernstein Inequality for Rational Functions with a prescribed zero, *Jour. Approx. Theory*, **95** (1998), 476-496.
26. N. K. Govil and R. N. Mohapatra, Markov and Bernstein Type Inequalities for Polynomials, *Journal of Inequalities and Applications* 3 (1999), 349 – 387.
27. D. Hong and R.N. Mohapatra, Optimal-Order approximation by mixed three-directional spline elements, *Computers and Mathematics with Applications* 40 (2000) 127 – 135.
28. Holly Carley, Xin Li, and R.N. Mohapatra, A Sharp Inequality of Markov-type for Polynomials Associated with Laguerre Weight, *Jour., Approx. Theory*, 113 (2001), 221- 228.
29. Ulrich Abel, Vijay Gupta and R. N. Mohapatra, Local Approximation by Beta Operators, *Nonlinear Analysis, Series A, Theory, Methods and Applications*, 62 (2005), 41-52.
30. Vijay Gupta, R. N. Mohapatra and Z. Finta, On Certain Family of Mixed Summation Integral type Operators, *Mathematical and Computer Modeling*, 42 (2005), 181- 191.
31. Vijay Gupta, Ram N. Mohapatra, Rate of Convergence for Summation Integral type Operators, *Mathematical Inequality and Applications*, 9 (2006), 465 - 472.
32. Vijay Gupta, R. N. Mohapatra, On the rate of convergence of modified Szasz- Mirakyan operators, *J. Concrete and Appl. Math.* 5 (2007), 197 – 202.
33. R. N. Mohapatra, A. M.Qazi and Q. I. Rahman, On Fractional Order Derivatives of Trigonometric Polynomials, to appear in *East J. Approx.* 13 (2007), 105 – 122.
34. Ulrich Abel, Vijay Gupta, Ram N. Mohapatra, Local Approximation by a variant of Bernstein-Durrmeyer operators, *Nonlinear Analysis, Series A, Theory, Methods and Applications* 68 (2008), 3372 – 3381.

35. Vijay Gupta and R. N. Mohapatra, Approximation by Durrmeyer-Bezier Operators, *Nonlinear Analysis, Series B, Real World Applications*, 26 (2008) 281 – 293.
36. Zbigniew Walczak and R. N. Mohapatra, Rate of Convergence of two dimensional analogue of Baskakov operators, *Commun. Appl. Anal.* 13 (2009), 105 – 110
37. R. N. Mohapatra and Z. Walczak, Remarks on some class of Szasz-Mirakyan operators, *East J. on Approx.* 15 (2009) 197-206
38. P.Srivastava, M. Kumar & R.N.Mohapatra, Solution of fourth order boundary value problems by numerical algorithms based on nonpolynomial quintic splines, *J. Numer. Math. & Stoch.* 4 (2012), 13-25
39. Pankaj Kumar Srivastava, Manoj Kumar and R. N. Mohapatra, Quintic nonpolynomial spline method for the solution of a second-order boundary-value problem with engineering applications, *Comput. Math. Appl.* 62 (2011) 1707–1714
40. Gurhan Icoz and Ram N. Mohapatra, Approximation Properties of  $q$ -Durrmeyer-Stancu Operators, *Anal. Theory Appl.* 29 (2013), 373- 383
41. Gurhan Icoz and R. N. Mohapatra, Weighted Approximation Properties of Stancu type modification of  $q$ -Szász-Durrmeyer Operators, *Commun. Fac. Sci. Univ. Ank. Sér. A1 Math. Stat.*, 65 (2016) 87-103.
42. Vishnu Narayan Mishra, R. B. Gandhi, Ram N. Mohapatra, A Summation-Integral type modification of Szasz-Mirakjan-Stancu operators, *journal of numerical analysis and approximation theory*, *J. Numer. Anal. Approx. Theory*, vol. 45 (2016) no. 1, pp. 27–36
43. Vishnu Narayan Mishra, R. N. Mohapatra, and Preeti Sharma, On approximation properties of Baskakov–Szász–Stancu operators using hypergeometric representation, *Applied Mathematics and Computation* 294 ( 1<sup>st</sup> February 2017), 77-86

### **Fluid Dynamics and Heat Transfer**

1. K. Vajravelu, L. C. Andrews and R. N. Mohapatra, Exact Solutions of the Unsteady Hydrodynamic Flows Past an Infinite Plate, *Acta Mechanica.* **74** (1988), 185-192.
2. K. Vajravelu and R. N. Mohapatra, On Fluid Dynamic Drag Reduction in Some Boundary Layer Theory, *Acta Mechanica*, **81** (1990), 59-68.
3. E. Soewono, K. Vajravelu and R. N. Mohapatra, Existence and Non-uniqueness of Solutions of a Singular non-linear boundary-layer Problem, *J. Math. Anal. Appl.* **159** (1991), 251-270.
4. E. Soewono, K. Vajravelu and R. N. Mohapatra, On Solutions of some singular, Non-linear Differential Equations arising in Boundary layer Theory, *J. Math. Anal. Appl.* **155** (1991), 499-512.
5. E. Soewono, K. Vajravelu and R. N. Mohapatra, Existence of Solutions of a Non-linear Boundary Value Problem, arising in Flow and heat transfer over a Stretching Sheet., *Nonlinear Analysis (Theory, Methods and Applications )* **18** (1992), 93-98.

6. K. Vajravelu, R. N. Mohapatra and E. Soewono, Some second order nonlinear systems arising in natural convection heat transfer, *J. Math. Anal. Appl.* **176** (1993), 346-358.
7. K. Vajravelu, E. Soewono, R. N. Mohapatra and J. Nayfeh, Second order nonlinear systems arising in natural convection flow of micropolar fluid, *Nonlinear Analysis ( Theory, Methods and Applications )* **22** (1994), 1409-1421.
8. Jun Cheng, Shijun Liao, R. N. Mohapatra and K. Vajravelu, Series solutions of nano-boundary layer flows by means of the homotopy analysis method, *J. Math. Anal. Appl.* **343** (2008), 233-245.
9. Jun Cheng, Shijun Liao, R. N. Mohapatra and K. Vajravelu, series solutions of stagnation slip flow and heat transfer by the homotopy analysis method, *Science in China, Series G Physics, Mechanics and Astronomy* **52** (2009), 893 – 899.
10. Talay. F. Akyildiz, K. Vajravelu, R. N. Mohapatra, Erik Sweet, Robert VanGorder, Implicit Differential Equation arising in the steady flow of a Sisko fluid, *Appl. Math. Comput.* **210** (2009), 189 – 196.

### **Mathematical Physics**

1. Bhimsen K. Shivamoggi and R. N. Mohapatra, The Number of “Effective Modes” of the Two and Three-Dimensional Nonlinear Schrodinger Equations, *Physics Letters, A* **131** (1988), 265-269.
2. N. C. Haldar, H. W. Kim, K. M. D’Souza, D. E. Barnes, S. E. Hartson and R. N. Mohapatra, Improved interface state density function in metal-semiconductor junctions by deep level transient spectroscopy, *Journal of Applied Physics*, **69** (1991), 6521-6525.

### **Variational Inequalities**

1. Ram Verma and Ram Mohapatra, Application of numerical range to approximation solvability of nonlinear functional equations, *Panamerican Math. Journal* **1** (1991), 46 – 54.
2. Ram N. Mohapatra and Ram U. Verma, Nonlinear Pseudo contractive Variational problems and projection methods, *Nonlinear Functional Analysis and Applications*, **10**(2005), 641 – 649.
3. R. N. Mohapatra and Ram U. Verma, Sensitivity Analysis for Cocoercively Monotone Variational Inclusion and  $(A, \eta)$  Monotonicity, *J. Appl. Math Comput.* **26** (2008) 281 – 293.
4. Ram U Verma and R. N. Mohapatra, The  $\varepsilon$ -efficiency conditions for multiobjective fractional programming problems, *Dyn. Contin. Discrete Impuls. Syst. Ser. A-Math. Anal.* , **19**(2012) 641 – 660.
5. N. K. Sahu, C. Nahak, R. N. Mohapatra and S. Nanda, Approximation Solvability of a class of A-monotone variational inclusion problems, *Dyn. Contin. Discrete Impuls. Syst. Ser. A-Math. Anal.*, **20** (2013), 227-240

6. N. k. Sahu, R. N. Mohapatra, C. Nahak, S. Nanda, Approximation Solvability of a Class of A-monotone Implicit Variational Inclusion Problems in Semi-inner Product Spaces, Applied Mathematics and Computation, 236 (2014), 109-117 .
7. N. K. Sahu, R. N. Mohapatra, C. Nahak, N. K. Mahato, A New Class of Generalized Monotone Mappings and Variational Inclusion Problems in Banach Spaces, Dynamics of Continuous, Discrete and Impulsive Systems Series A: Mathematical Analysis 23 (2016) 447-463
8. Gayatri pany, R. N. Mohapatra and Sabyasachi Pani, A Class of Mixed Variational-like Inequalities and Equilibrium Problems in Banach Spaces, Journal of Inequalities and Special 7 (2016), 241-252.
9. Gayatri Pany, Sabyasachi Pani and R. N. Mohapatra, Error Analysis for a class of Nonlinear Quasi Variational inequalities, to appear in Dynamics of Continuous, Discrete and Impulsive Systems Series A: Mathematical Analysis.

### **Graph Theory**

1. P. D. Johnson Jr. and R. N. Mohapatra, A class of Inequalities Relating Degrees of Adjacent Nodes to the Average Degree in Edge-weighted Uniform Hypergraphs, International Journal of Mathematics and Mathematical Sciences, 2005 (2005), Issue 21, 3419-3426
2. Pratima Panigrahi and R. N. Mohapatra, All primitive strongly regular graphs except four are hyper-energetic, Applied Math. Letters 24 (2011) 1995-1997

### **Differential, Difference and Integral Equations**

1. R.N. Mohapatra, K. Vajravelu and Y. Yin, “Generalized Quasilinearization Method and Rapid Convergence for First Order Initial Value Problems”, Jour. Math. Anal. and Appl., **207** (1997), 206-219.
2. R.N. Mohapatra, K. Vajravelu and Y. Yin, “An Improved Quasilinearization Method for General Second Order Boundary Value Problems”, Jour. Math. Anal. and Appl., **214** (1997), 55-62.
3. R.N. Mohapatra, K. Vajravelu and Y. Yin, “Extension of the method of quasilinearization and rapid convergence”, Jour. Optim. Theory Appl., **96** (1998), 667-682.
4. R.N. Mohapatra, K. Vajravelu and Y. Yin, “Generalized Quasilinearization Methods for Second Order Boundary Value Problems”, Nonlinear Analysis (Ser B; Real World Appl.), **36** (1999), 799-806.

5. R.N. Mohapatra, K. Vajravelu, and Y. Yin, Cubic and Quadric Convergence for First Order Periodic Boundary Value Problems, *Jorn. Optim. Theory Appl.* **99** (1998), 465-480.
6. V. Lakshmikantham and R.N. Mohapatra, Strict Stability of Differential Equations, *Nonlinear Analysis (Theory, Methods and Applications)* **46** (2001), 915 – 921.
7. Rajesh K. Pandey, Narayan Kumar, R. N. Mohapatra, An Approximate Method for Solving Fractional Delay Differential Equations, to appear in *International Journal of Applied and Computational Mathematics* (Springer)
8. .Lakshmi Narayan Mishra, Mausumi Sen , and Ram N. Mohapatra, On existence theorems for some generalized nonlinear functional-integral equations with applications, to appear in *FILOMAT*
9. Turhan Koprubasi and R. N. Mohapatra, A study of some discrete Dirac equations with principal functions" to appear in *Acta Math. Hungarica* (Budapest).
10. Turhan Koprubasi and R. N. Mohapatra, Spectral properties of generalized eigenparameter dependent discrete Sturm-Liouville type equation, to appear in *Quaestiones Mathematicae*.

### **Fuzzy Sets and Fuzzy Differential Equations**

1. V. Lakshmikantham and R.N. Mohapatra, Basic Properties of Solutions of Fuzzy Differential Equations, *Nonlinear Studies*, **8** (2001), 113 – 124.
2. Paul Flores, R. N. Mohapatra and Gary Richardson, Lattice-Valued Spaces: Fuzzy Convergence, *Fuzzy Sets and Systems*, **157** (2006), 2706-2714.
3. H. Boustique, R. N. Mohapatra, G. Richardson, Lattice-valued Fuzzy interior operators, *Fuzzy Sets and Systems*, **160** (2009) 2947–2955.
4. S. Nanda, R. N. Mohapatra and Ratan K. Guha, A Note on Geometric Properties of Fuzzy sets, *Journal of Fuzzy Math.*, **20** (2012), 25-28

### **Complex Variables**

1. R. Aghalary, S. B. Joshi, R. N. Mohapatra and V. Ravichandran, Subordinations for analytic functions defined by Dziok-Srivastava linear operator, *Appl. Math. Comput.* **187** (2007), 13 – 19.
2. A. Liman, R. N. Mohapatra W. M. Shah, Inequalities for polynomials not vanishing in a disk. *Applied Math. Computation*, **218** (2011) 949–955
3. A. Liman, W. M. Shah & R. N. Mohapatra, Inequalities for the polar derivative of a polynomial, *Complex Anal. Operat. Theory*, **6** (2012) 1199-1209
4. Mohapatra, R. N. and Panigrahi Trailokya, Results on starlikeness of certain integral operator. *Panamer. Math. J.* **24**(2014), 27–34

5. S. B. Joshi, Sayali Joshi, R. N. Mohapatra, On a subclass of analytic functions for operator on Hilbert space, *Studia Univ Babeş-Bolyai Mathematica (Romania)*, LXI, No. 2, (2016) 147-153.
6. Trailokya Panigrahi and R. N. Mohapatra, Starlikeness and related properties of certain integral operator for multivalent functions, to appear in *Stud. Univ. Babeş-Bolyai Math (Romania)*.

### **Frame Theory**

1. Deguang Han, Wu Jing and R. N. Mohapatra, Structured Parseval Frames in Hilbert  $C^*$  modules, *Contemporary Math. (American Math. Soc.)*, 414 (2006) 275-288.
2. Deguang Han, Wu Jing, David Larson and Ram N. Mohapatra, Riesz bases and their dual modular frames in Hilbert  $C^*$  modules, *J. Math. Anal. Appl.* 343 (2008), 246 – 256.
3. Deguang Han, Wu Jing and Ram N. Mohapatra, Perturbation of Frames and Riesz Bases in Hilbert  $C^*$  modules, *Linear Algebra and Appl.* 431 (2009) 746–759.
4. DeGuang Han, Wu Jing, David Larson, Pengtong Li and Ram N. Mohapatra, Dilation of dual frame pairs in Hilbert  $C^*$  modules, to appear in *Resultate der Mathematik* 63 (2013) 241-250
5. Saliha Pehlivan, DeGuang Han and Ram Mohapatra, Linearly connected sequences and spectrally optimal dual frames for erasures, *Journal of Functional Analysis* 265 (2013) 2855–2876.
6. Saliha Pehlivan, DeGuang Han and Ram Mohapatra, Spectrally two uniform frames for Erasers, Operators and Matrices. 9 (2015) , 383-399.

### **Filters for Automatic Target Detection**

1. R. Muise, A. Mahalanobis, R. Mohapatra, X. Li, D. Han and Wasfi Mikhael, Constrained quadratic correlation Filters for Target Detection, *Applied Optics* 43 (2004), 304-314.

### **Math. Biology**

1. Hina Khan, Ram N. Mohapatra, K. Vajravelu, S. J. Liao, The explicit series solution of SIR and SIS epidemic models, *Appl. Math. Comput.*, 215 (2009) 653–669.
2. Hina Khan, Shijun Liao, R. N. Mohapatra and K. Vajravelu, An analytical solution for a nonlinear time-delay model in Biology, to appear in *Nonlinear Science and Numerical Simulation*.

## **Optimization**

1. C. Nahak and R. N. Mohapatra,  $d-(\rho - \eta, \theta)$  invexity in multiobjective optimization, *Nonlinear Analysis, Series A, Theory Methods and Applications* 70 (2009), 2288 – 2296
2. C. Nahak & Ram N. Mohapatra, Non-smooth  $\rho - (\eta, \theta)$  Invexity in Multi-Objective Programming Problems, To appear in *Optimization Letters*.
3. S. K. Padhan, C. Nahak & R. N. Mohapatra, Second and Higher Order duality in Banach spaces under  $\rho - (\eta, \theta)$  Invexity, To appear in *Nonlinear Analysis Hybrid Systems*, 5 ( 2011) 457- 466
4. S. K. Mishra, R. N. Mohapatra, E. A. Youness, Some properties of semi  $E$ - $b$ -vex Functions, *Applied Mathematics and Computation*, 217 (2011) 5525– 5530
5. R. N. Mohapatra and Ram U. Verma, The  $\varepsilon$  - optimality condition for multi-objective fractional programming problems, *Communications on Applied Nonlinear Analysis*, 19 (2012) 99-108
6. R. N. Mohapatra and Ram U. Verma, The  $\varepsilon$ -efficiency conditions for multi-objective Fractional Programming Problems, *DCDIS series A*, 19 (2012) 641-660
7. R.N. Mohapatra and R. U. Verma, Generalized Higher-Order Univexities and Applications to Strongly Parametric Duality Models for Discrete Minimax Fractional Programming, *Transactions on Mathematical Programming and Applications*, 1 (2013) 35-54.
8. Mohapatra, R. N.; Verma, R. U. Generalized hybrid invexities with second-order parametric optimality criteria for discrete minmax fractional programming. *Adv. Nonlinear Var. Inequal.* 17 (2014), 88-102.
9. B. B. Upadhyay, R. N. Mohapatra, and S. K. Mishra, On Relationships between Vector Variational Inequality and Nonsmooth Vector Optimization Problems via Strict Minimizers. *Advances in Nonlinear Variational Inequalities* 16 (2016) 1-22.
10. Ram N. Mohapatra and Ram U. Verma, Mathematical Programming on Optimality Conditions and Second Order Invexities, to appear in *Investigations in Mathematical Sciences*, India,

## **Papers Submitted for Publication:**

1. Gurhan Icoz, Ram N. Mohapatra and Mehmet Ali Sarigol, Approximation properties of  $q$ -Phillips-Durrmeyer-Stancu Operators.
2. N. K. Sahu, C. Nahak, R. N. Mohapatra and S. Nanda, Frames in Uniformly Convex Smooth Banach Spaces.
3. N. K. Sahu, C. Nahak, R. N. Mohapatra and S. Nanda, Bessel sequences and Frames in Semi-Inner Product Spaces.
4. N. K. Mahato, C. Nahak and R. N. Mohapatra, Generalized Relaxed  $\alpha$  - Pseudomonotone multi-valued mappings and Variational-like Inequalities.

5. Sapna Pandit, Manoj Kumar and R. N. Mohapatra, A composite Numerical Scheme for Numerical Simulation fo Parabolic Burgers' Equation.
6. A. Bhurujee, G. Panda and R. N. Mohapatra, Interval Valued Convex Programming Problem.

**b) Refereed Conference Proceedings and Book Chapters: ( By invitation )**

1. P.D. Johnson, Jr. and R.N. Mohapatra, Inequalities Involving Infinite Matrices, Inequalities II (Proceedings of Oberwolfach Conference on General Inequalities II), 1978 (Editor: Beckenbach, Publisher: Birkhauser Verlag), 1980, 54-80.
2. R.N. Mohapatra, Remarks on the Generalization of Schur Hardy Inequality, Inequalities II (Editor: Beckenbach) Birkhauser Verlag, 1980, 459-460.
5. P.D. Johnson, Jr. and R.N. Mohapatra, Problems in the Theory of Infinite Matrices, Inequalities II (Editor: Beckenbach), Birkhauser Verlag, 1980, 451.
6. A. S.B. Holland, R.N. Mohapatra and B.N. Sahney, Approximation of Integrable Functions by Borel means, Non-Linear Analysis and Applications (Proceedings of the Conference held in 1981 in St. Johns, Newfoundland, Editors: Burry and Singh), Marcel Dekker, 1982, 413-422.
7. R.N. Mohapatra and S.P. Singh, Lp Approximation of Functions by their Fourier series Non-Linear Analysis and Applications (Proceedings of the Conference held in 1981 in St. Johns, Newfoundland, Editors: Burry and Singh), Marcel Dekker, 1982, 423-439.
8. Prem Chandra and R.N. Mohapatra, Inequalities Which Yield Inclusions Among Sequence Spaces Containing  $l_p$ , Inequalities 3 (Proceedings of the Third Oberwolfach Conference on General Inequalities held in 1981, Editors: Beckenbach and Walters), Birkhauser Verlag, 1983, 455-570.
9. Prem Chandra and R.N. Mohapatra, Problems, Inequalities III (Editors: Beckenbach and Walters) Birkhauser Verlag, 1983, 511.
10. P.D. Johnson, Jr. and R.N. Mohapatra, Inequalities Related to Sequence Spaces ces  $[p,q]$ , Inequalities 4 (Proceedings of the Fourth Oberwolfach Conference on General Inequalities held in 1983), Birkhauser Verlag, 1984, 191-201.
11. R.N. Mohapatra, An Inverse Result in Approximation of Functions by Norlund Means of Their Fourier Series, Pittman Research Notes in Math. **133** (1984), 124-139.
12. B.K. Shivamoggi and R.N. Mohapatra, Generalized Painleve Formulation and Variational Symmetries of the Lorentz Equation, Proceedings volume of the 6th South Eastern Approximation Theorists International Conference held in Memphis, 1991, Approximation Theory, Marcel Dekker, 463-472.



13. R.N.Mohapatra, D.C.Russell, K.Vajravelu, Copson's Inequalities for Series and their variations, *General Inequalities* 6, Birkhauser-Verlag, **103** (1992), 49-58.
14. Govil, N.K. and R.N. Mohapatra, "Bernstein type Inequalities for rational functions with prescribed poles," *Recent Progress in Inequalities*, Editor G.V. Milovanovic, Kluwer Academic Publishers, 1997.
15. R.N. Mohapatra, Bernstein-type inequalities and their generalizations, *Fourier Analysis, approximation theory and applications* (Aligarch, 1993), 199-214 New Age, New Delhi, 1997.
16. N.K. Govil and R.N. Mohapatra, Inequalities for maximum modulus of rational functions with prescribed poles, *Approximation Theory*, 255-263, Monograph, Textbooks Pure and Appl. Math., 212, Marcel Dekker, 1998.
17. N.K. Govil and R.N. Mohapatra, Degree of convergence for a class of linear operators, *Analytic and Geometric inequalities*, 135-150, Kluwer Academic Publishers, 1999.
18. D. Hong, H.W. Liu, and R.N. Mohapatra, Optional triangulations and smoothness conditions for bivariate splines, *Approximation Theory 9* (Editions: Chui and Schumaker), 1998, 129-136.
19. Rajkumar Madhuram, Ratan Guha, and R.N. Mohapatra, Multiresolution Representation of Non-Uniformly Sampled Terrain Databases Using Wavelets, *Proceedings of the Thirtieth Asilomar Conference on Signals, Systems and Computers*, 1996, 988-992.
20. Ratan Guha, Rajkumar Madhuram, and R.N. Mohapatra, Applying wavelets for Terrain Data Compression, *Proceedings of the Fourteenth International Conference on Computers and Information Sciences (ISCIS XIV)*, 1999, 421-428.
21. Ratan Guha, Rajkumar Madhuram, and R.N. Mohapatra, Wavelet Based Scale Filtering and Triangular Irregular Network for Terrain Data, *Proceedings of the South Eastern Simulation Conference*, 1999, 136 – 142.
22. V. Lakshmikantham and R.N. Mohapatra, Fuzzy Sets and Fuzzy Differential Equations, *Differential Equations and Nonlinear Mechanics* (conference at Orlando, Florida, 1999), Kluwer Acad. Publ., (283-299) Dordrecht, 2001.
22. Christopher Huff and Ram N. Mohapatra, Applications of Compressive Sensing to Surveillance Problems, *Mathematics and Computing 2013, International Conference in Haldia, India*, Springer Proceedings in Mathematics and Statistics, 2014, 121-150.
23. Dana Baxley, N. K. Sahu and Ram N. Mohapatra, Epidemiological Models: A Study of Two Retroviruses, *Mathematics and Computing 2013, International Conference in Haldia, India*, Springer Proceedings in Mathematics and Statistics, 2014, 323-352
24. Mohapatra, R. N.; Porchia, Donald; Shuai, Zhisheng Compartmental disease models with heterogeneous populations: a survey. *Mathematical analysis and its applications*, 619–631, Springer Proc. Math. Stat., 143, Springer, New Delhi, 2015.

25. Mahato, N. K.; Mohapatra, R. N. Applications of generalized monotonicity to variational-like inequalities and equilibrium problems. *Mathematical analysis and its applications*, 159–168, Springer Proc. Math. Stat., 143, Springer, New Delhi, 2015
26. Padhan, Saroj Kumar; Behera, Pramod Kumar; Mohapatra, R. N. Second-order symmetric duality and variational problems. *Mathematics and computing*, 49–57, Springer Proc. Math. Stat., 139, Springer, New Delhi, 2015
27. Sahu, N. K.; Mohapatra, Ram N. Frames in semi-inner product spaces. *Mathematical analysis and its applications*, 149–158, Springer Proc. Math. Stat., 143, Springer, New Delhi, 2015
28. Mishra, S. K.; Singh, Vinay; Laha, Vivek; Mohapatra, R. N. On constraint qualifications for multiobjective optimization problems with vanishing constraints. *Optimization methods, theory and applications*, 95–135, Springer, Heidelberg, 2015.

### **Research Reviews or Referee Activities:**

Reviewer of Mathematical Reviews

Reviewer of Zentralblatt fur Math.

Served as referee for papers submitted to the following: Proceedings of the London Math. Soc., Proceedings of the American Math. Soc., Jour. Approximation Theory, Archiv. der Math., Real Analysis Exchange, Journal of Mathematical Physics, Computers in Mathematics, Journal of Math. Analysis and Applications, Mathematical Inequalities and Applications, Mathematische Nachrichten Indian Journal of Pure and Applied Mathematics, Indian Journal of Mathematics, Journal of the Indian Mathematical Society, Pan American Journal, International Journal of Mathematics and Mathematical Sciences, Nigerian Journal of Mathematics, Canadian Journal of Physics, Central European Journal of Physics, Applied Mathematics and Computing, Bulletin of the Malaysian Academy of Sciences, Applied Mathematics Letters, Mathematics and Computer Modeling, Journal of Research in Differential Equations and Applications, AJSE, Physica D, Mathematical Inequalities and Applications, International Journal of Mathematics and Mathematical Sciences, Journal of Mathematical Analysis and Applications, Mathematical Inequalities and Applications, Proceedings of the Royal Society (London Ser. A).

### **Editorial Activity for Journals:**

Editor:

Communications in Applied Nonlinear Analysis

International Journal of Applied Mathematics

Pan American Journal

Advances in Variational Inequalities

Vesnik Mathematicki  
Journal of Inequalities and Applications (from its starting to April 2013)  
Austin Journal of Mathematics

Member of Editorial Board:

Mathematical Inequalities and Applications  
Journal of Inequalities and Special Functions  
International Journal of Mathematics and Mathematical Sciences  
Journal of Applied Mathematics  
Journal of Concrete and Applied Mathematics

**Supervision of graduate student research: theses or dissertation:**

Supervised **eight** students for Ph.D.

Supervised three theses leading to M.S. degree of American University of Beirut, and supervised thirty three students for their Master's theses at UCF, four of which received the best thesis award at the Mathematics Department, UCF.

From January 1999 to December 2000, Dr. Amer Qazi of Montreal was a NSECRC Post Doctoral Fellow with me at UCF.

**Membership in Professional Associations:**

American Mathematical Society