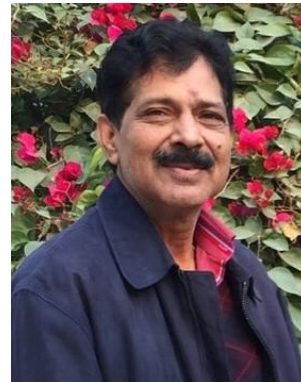## Dr. R. K. Nagaich

Professor & Dean Physical Sciencs
Department of Mathematics
Punjabi University, Patiala-147002, India
Tel. No.: (0175)-3046189 (O), 094178-74900 (M).
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Educational Qualifications:

1983 **Ph.D**. (Mathematics), Aligarh Muslim University, Aligarh

1981 **M.Phil**. (Mathematics), Aligarh Muslim University, Aligarh

1978 **M.Sc**. (Mathematics), Aligarh Muslim University, Aligarh

Scholarships / Fellowships:

- **Post Graduate Merit Science Scholarship**, AMU Aligarh from 1976-1978
- **University Research Fellowship**, AMU Aligarh from January 1979 to December 1980
- **UGC Fellowship** from January 1981 to June 1983
- **Senior research Fellowship** under DSA programme from January 1984 to June 1984
- **CSIR Research Associateship** from July 1984 to December 1985

Research/Teaching Experience:

- **Under Graduate Classes :** **34 years (approx.)**
- **Post Graduate Classes :** **32 years (approx.)**

Ph.D. Thesis Supervised/Supervising:

1. **Rakesh Kumar**

    Department of Basic and Applied Sciences, Punjabi University, Patiala.

    Topic: *Geometry of Manifolds with Indefinite Metrics.*

    Status: Degree awarded.

2. **Jasleen Kaur**

   Department of Mathematics, Punjabi University, Patiala.

   Topic: *Manifolds with indefinite metrics and Allied Structures.*

   Status: Degree awarded.

3. **Rachna Rani**

   University College, Moonak.

   Topic: *Geometry of Indefinite manifolds and their Related Structures.*

   Status: Degree awarded.

4. **Manish Gogna**

   Baba Banda Singh Bahadur Institute of Engineering & Technology,

   Fathehgarh Sahib, Punjab.

   Topic: *The Geometry of CR-Lightlike Submanifolds*

   Status: Degree awarded

5. **Varun Jain**

   Multani Mal Modi College, Patiala, Punjab.

   Topic: *The Geometry of GCR-Lightlike Submanifolds of Indefinite Sasakian Manifolds*

   Status: Degree awarded

6. **Sangeet Kumar**

   Chitkara University, Rajpura, Punjab.

   Topic: *The Geometry of GCR-Lightlike Submanifolds of Indefinite Kaehler Manifolds*

   Status: Degree awarded

7. **Ms. Anu Devgan**

   Topic: *Geometry of Lightlike Submanifolds of Almost Complex Manifolds with Norden Metric*

   Status: Registered

8. **Ms Garima Goel**

   Topic: *Geometry of Lightlike Submanifolds of semi-Riemannian Manifolds*

   Status: Registered

9. **Ms. Rupali**

   Topic: *Geometry of Lightlike Submersions*

   Status: Registered

M. Phil. Supervised:

1. **Jyoti Sethi**

   Topic: *On the Geometry of Hermitian Manifolds*.

2. **Parshotam Das**

   Topic: *On Axiom of Sub Manifolds*.

3. **Gurdip Singhq2**

   Topic: *Curvature Tensors on almost Hermitian Mnifolds*.

4. **Gurdip Singh**

   Topic: *Structure on Manifolds*.

5. **Rakesh Kumar**

   Topic: *Some Structures on Tangent bundles*.

6. **Amrik Sngh**

   Topic: *Some results on almost Hermitian Manifolds and allied Structures*.

7. **Kamal Kishore**

   Topic: *Manifolds with Indefinite Metrics*.

8. **Arvind Nanda**

   Topic: *Some results on Homogeneous almost Hermitian Manifolds*.

9. **Sanjeev**

   Topic: *Derivations and Related Maps*.

10. **Amrit Pal Kaur**

    Topic: *On Semi Rings*.

Research Papers and Thesis Reviewed

Several research papers and thesis have been reviewed.

Fields of Interest

➢ Geometry of Manifolds with Indefinite Metrics

➢ History of Mathematics

Referees:

Prof. Manjusha Majumdar (Tarafdar)
Department of Pure Mathematics
University of Calcutta, Kolkata, India
E-mail: drmanjushamajumdar@gmail.com
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Professor K. L. Duggal
Department of Mathematics and Statistics,
University of Windsor,
Windsor, ON, Canada N9B 3P4
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Professor Zafar Ahsan
Department of Mathematics
Aligarh Muslim University, Aligarh (U.P.)
E-mail:zafar.ahsan@rediffmail.com
Phone: +91- 9897399337

Professor Bayram Sahin
Department of Mathematics, Faculty of
Sciences and Arts
Inonu University, Malatya, Turkey
E-mail: bsahin@inonu.edu.tr

Courses /Workshop/Conferences Attended

1. Delivered an invited talk in **National Conference on Topology, Analysis, Algebra and Their Applications**, organized by Department of Mathematics, Shri Mata Vaishno Devi University, Katra during 7-8th March, 2017.

2. Delivered an invited talk in **International Conference on Differential Geometry, Algebra and Analysis** organized by Department of Mathematics, Jamia Milia Islamia, New Delhi, during November 15-17, 2016.

3. Delivered an invited talk in **International Conference on Mathematics for Brain Studies**, during 1-3 February, 2016, organized by School of Sciences, Center for Research Studies, Noida International University, Greater Noida.

4. Delivered an invited lecture in "**18th International Conference of International Academy of Physical Sciences on Recent Trends in Physical Sciences**", organized by Faculty of Sciences, University of Allahabad, Allahabad, during 22-24 December, 2015.

5. Delivered an invited lecture and Chaired a session in "**International Conference on Recent Trends in Mathematics**" organized by Department of Mathematics, University of Allahabad, Allahabad during 10-12 July, 2015.

6. Chaired a session of one day workshop on "**Some High Points of Undergraduate Mathematics Education**" organized by Ramanujan Mathematical Society at Indian Institute of Science Education and Research, Mohali on May 14th, 2015.

7. Delivered an invited lecture and Chaired a session in "**National Conference of Differential Geometry and its Applications**" organized by Department of Mathematics, University of Allahabad, Allahabad, during 27-28 December, 2014.

8. Delivered an invited lecture in "**U.G.C. Sponsored 48th Refresher Course in Physical Sciences**", organized by Academic Staff College, Punjabi University, Patiala during December 08 to December 27, 2014.

9. Delivered an invited lecture and Chaired a session in "**International Conference on Algebra, Geometry, Analysis and Their Applications**" organized by Department of Mathematics, Jamia Milia Islamia, New Delhi, during 27-29 November, 2014.

10. Delivered an invited lecture in "**Carrer Counselling & Guidance Cell**", organized by P. G. Department of Mathematics, Sri Guru Teg Bahadur Khalsa College, Anandpur Sahib on 13th September, 2014.

11. Delivered an invited lecture and Chaired a session in "**International Conference on Differential Geometry and its Applications**", organized by Department of Mathematics, Jadavpur University, Kolkata in collaboration with The Tensor Society, during 16-18 October, 2014.

12. Delivered invited lectures in "**U.G.C. Sponsored Refresher Course in Mathematics and Statistics**", organized by Academic Staff College, Punjabi University, Patiala during May 12 to May 31, 2014.

13. Delivered an invited lecture and Chaired a session in "**International Conference on Differential Geometry and Relativity 2013**", organized by Department of Mathematics, Deen Dyal Upadhyaya Gorakhpur University, Gorakhpur in collaboration with The Tensor Society, during 09-11 November, 2013.

14. Delivered an invited lecture and Chaired a session in "**International Conference on Differential Geometry and Relativity**", organized by Department of Mathematics, Aligarh Muslim University, Aligarh in collaboration with The Tensor Society, during 20-22 November, 2012.

15. Delivered an invited lecture and Chaired a session in "**International Conference on Differential Geometry, Functional Analysis and Applications (ICDGFAA-12)**", organized by Department of Mathematics, Jamia Millia Islamia, New Delhi during 08-10 September, 2012.

16. Participated and delivered an Invited talk in "**International Conference on Analysis and its Applications**", organized by Department of Mathematics, Aligarh Muslim University, Aligarh, during November 3-5, 2008.

17. Participated in "**11th Punjab Science Congress**", held at Patiala, February 7-9, 2008.

18. Participated in "**8th Punjab Science Congress**", held at Patiala, February 7-9, 2005.

19. Participated in "**National Workshop on status of Basic Science Research in Institutions of Higher Education**", organized by Association of Indian Universities (N.D) held at Punjabi University, Patiala, Jan. 29-30, 2004.

20. Participated in the "**Annual Meeting of Indian Mathematical Society**" held at Lucknow University, Lucknow, Dec. 2003.

21. Participated and presented a paper in "**National Conference on Mathematical and Statistical Techniques**", held at T.I.E.T., Patiala, Dec. 6 - 8, 2001.

22. Delivered an Invited talk at the "**Conference on Recent Development in Relativity and Allied Topics**", held at Department of Mathematics, Aligarh Muslim University, Aligarh from August 30 to September 1, 1999.

23. Participated and presented a paper in "**1st Punjab Science Congress**", held at Patiala, April 28-30.

24. Participated in "**83rd Indian Science Congress**" association held at Patiala, Jan 3-8, 1996.

25. Participated and presented a paper in a "**Conference on Lie Groups and Applications**" held at Department of Mathematics, Aligarh Muslim University, Aligarh on May 1995.

26. Participated in "**All India Summer School**" conducted at Bhaskaracharya Pratishthana, Pune, from June 10-29, 1991.

27. Participated in "**55th Annual Conference of Indian Mathematical Society**" held at Delhi, Dec. 27-30, 1989.

28. Participated in U.G.C. Sponsored "**Instructional Conference on Functional Analysis**", held at Department of Mathematics, Aligarh Muslim University, Aligarh in 1987.

29. Participated in U.G.C. Sponsored "**Instructional Conference on Differential Geometry Methods in Relativity**" held at Department of Mathematics, Aligarh Muslim University, Aligarh, from April 21 to May 10, 1986.

30. Participated and presented a paper at the "**51th Annual Conference of Indian Mathematical Society**" held at Cochin, Dec 1985.

31. Participated in U.G.C. Sponsored "**Instructional Conference on Differential Analysis**" held at I.I.T. Kanpur, April 9-28, 1984.

32. Participated and presented a paper at the "**49th Annual Conference of Indian Mathematical Society**" held at Madras, Dec. 27-29, 1983.

33. Participated and presented a paper at the "**48th Annual Conference of Indian Mathematical Society**" held at Bhagalpur, Dec. 26-27, 1982.

Members of Different Professional Bodies

1. Life Member of Indian Mathematical Society
2. Life Member of Bharat Ganit Parshid
3. Life Member of Panjab Academy of Science.
4. Life Member of Tensor Society.
5. Life member of Ramanujan Mathematical Society.

Book/Article/Chapter Publications

1. A book entitled "**Manifolds With Indefinite Metrics**" jointly written by Jasleen Kaur, Rakesh Kumar and **R. K. Nagaich** has been published by **LAP Lambert Academic Publishing,** Germany on November 11th, 2014 with ISBN-13: 978-3-659-63256-3 and ISBN-10: 3659632562.

2. Edited and Compiled the Abstract Book of "**International Conference on Emerging Areas of Mathematics for Science & Technology (ICEAMST-2015)**" in conjunction with   the 12th Annual Conference of the Indian Society of Industrial & Applied Mathematics, organized by the Department of Mathematics, Punjabi University, Patiala, during 30th January to 1st February, 2015.

Conferences/Workshop/Seminar Organized

1. Organized and delivered invited lectures in "**U.G.C. Sponsored Refresher Course in Mathematics and Statistics**", organized by Academic Staff College, Punjabi University, Patiala during May 12 to May 31, 2014.

2. Organized "**Teacher Enrichment Workshop (TEW) on Finite Group Theory**", in the Department of Mathematics, Punjabi University, Patiala in collaboration with National Centre of Mathematics during May 27 to June 2, 2014.

3. Organized "**International Conference on Emerging Areas of Mathematics for Science & Technology (ICEAMST-2015)**" in conjunction with the 12th Annual Conference of the Indian Society of Industrial & Applied Mathematics, during 30th January to 1st February, 2015.

Details of Published Research Work

1. *Some characterization theorems on holomorphic sectional curvature of GCR-lightlike submanifolds,* **Int. J. Geom. Methods Mod. Phys., 14** (3), (2017), 1-18. **(SCI & SCOPUS Indexed)**

2. *The axioms of spheres in lightlike geometry of submanifolds*, **Proc. Indian Acad. Sci. (Math. Sci),** 126 (4) (2016), **613-621.** DOI 10.1007/s12044-016-0300-9. **(SCI & SCOPUS Indexed)**

3. *Characterizations of null holomorphic sectional curvature of GCR-lightlike submanifold of an indefinite nearly Kaehler manifold,* **Anal. Theory Appl.**, **32** (2) (2016), 122-134.

4. *Screen conformal lightlike submanifolds of semi-Riemannian manifolds*, **J. Geometry**, **107** (2016), 635-655. DOI 10.1007/s00022-015-0305-z. **(SCOPUS Indexed)**

5. *Non existence of totally contact umbilical GCR-lightlike submanifolds of indefinite Kenmotsu manifolds*, **Hacet. J. Math. Stat., 44**(1) (2015), 83-91. DOI :10.5672/HJMS.20154490086. **(SCI & SCOPUS Indexed)**

6. *Ricci Tensor for GCR-lightlike submanifolds of indefinite nearly Kaehler manifolds*, **Afr. Diaspora J. Math.**, 17 (1) (2014), 32–48.

7. *GCR-lightlike submanifolds of a semi-Riemannian product manifold*, **Bull. Korean Math. Soc.**, 51(3) (2014), 883–899. http://dx.doi.org/10.4134/BKMS.2014.51.3.883. **(SCI Indexed)**

8. *On totally contact umbilical CR-lightlike submanifolds of indefinite Sasakian manifolds,* **Demonstratio Math., 47** (1) (2014), 170-178**. (ESCI & SCOPUS Indexed)**

9. *Characterization of GCR-lightlike warped product of indefinite Sasakian manifolds,* **Arab J. Math. Sci.**, **20**(4), (2014), 191-204. http://dx.doi.org /10.1016/j.ajmsc.2013.08.002.

10. *GCR-lightlike submanifolds of indefinite nearly Kaehler manifolds,* **Bull. Korean Math. Soc.,** **50**(4) (2013), 1173–1192. **(MR3092381) (SCI Indexed)**

11. *Integrability of distributions in GCR-lightlike submanifolds,* **Mathematical Sciences and Applications E-Notes, 1**(2) (2013), 1-10.

12. *Ricci tensor of GCR-lightlike submanifolds of indefinite complex space,* **Bull. Iranian Math. Soc., 39**(5) **(**2013), 1009-1029. **(SCI & SCOPUS Indexed)**

13. *Integrability of distributions in GCR-lightlike submanifolds of indefinite Sasakian Manifolds,* **Kyungpook Math. J., 53**(2) (2013), 207-218. **(SCOPUS Indexed)**

14. *Totally contact umbilical lightlike hypersurfaces of indefinite S-manifolds*, **Journal of Mathematics.** Volume 2013, Article ID 395787, 7 pages. http://dx.doi.org/10.1155/2013/395787. **(MR3097212)**

15. *Non existence of totally contact umbilical GCR-lightlike submanifolds of indefinite Cosymplectic manifolds*, **Vietnam J. Math., 41** (2013), 121–134. DOI 10.1007/s10013-013-0010-x. **(MR3089811)** **(SCOPUS Indexed)**

16. *Integrability of distributions in GCR-lightlike submanifolds of indefinite Cosymplectic manifolds,* **Lobachevskii J. Math., 34** (1) (2013), 76–84*.* **(MR3031558) (SCOPUS Indexed)**

17. *Characterization of GCR-lightlike warped product of indefinite Cosymplectic manifolds*, **Novi Sad J. Math**., **42(**2) (2012), 111-126. **(MR3099741)**

18. *Totally umbilical lightlike hypersurfaces of semi-Riemannian manifolds,* **J. Tensor Soc.,** **6**(2) (2012), 145-156**. (MR3076205)**

19. On Lightlike Submersions, **Journal of Tensor Society**. **6**(2), (2012), 137-144**.**

20. *On GCR-lightlike product of Indefinite Cosymplectic manifolds,* **Int. J. Math. Math. Sci.,** Volume 2012, Article ID 605816, 12 pages. **(MR2959591) (SCOPUS Indexed)**

21. *Characterization of holomorphic bisectional curvature of GCR-lightlike submanifolds*, **Adv. Math. Phys.,** Volume 2012, Article ID 356263, 18 pages. **(MR2945124) (SCI & SCOPUS Indexed)**

22. *Integrebility of distributions in GCR-lightlike submanifolds of indefinite Kaehler manifolds*, **Commun. Korean Math. Soc., 27** (3) (2012), 591–602. **(MR2978726) (SCOPUS Indexed)**

23. *Integrability of distributions in CR-lightlike submanifolds of indefinite Sasakian manifolds*, **Int. J. Math. Anal., 6**(4) (2012), 199-207. **(MR2876191) (SCOPUS Indexed)**

24. *Characterization of CR-Lightlike Warped Product of Indefinite Kaehler Manifolds*, **ISRN Mathematical Physics,** Volume 2012, Article ID 957176, 14 pages.

25. *Generalized Cauchy-Riemann lightlike submanifolds*, **J. Math. Anal., 2**(2) (2011), 29-37. **(MR2877998)**

26. *Vanishing of the Bochner Curvature Tensor of Indefinite Almost Hermitian Manifolds*, **Euresian Math. J., 2**(3) (2011), 82-88. **(MR2910842)**

27. GCR-*lightlike product of indefinite Kaehler manifolds*, **ISRN Geometry,** Volume 2011, Article ID 531281, 13 pages.

28. *Totally contact umbilical GCR-lightlike submanifolds of indefinite Sasakian manifolds*, **Vietnam J. Math.**, **39**(1) (2011), 91-103. **(MR2841638)** **(SCOPUS Indexed)**

29. *GCR-lightlike product of indefinite Sasakian manifolds*, **Adv. Math. Phys.,** Volume 2011, Article ID 983069, 13 pages. **(MR2801348) (SCI & SCOPUS Indexed)**

30. *Indefinite nearly Kaehler manifolds of constant type*, **Eurasian Math. J., 2**(1) (2011), 120-127. **(MR2910825)**

31. *On CR-lightlike product of an indefinite Kaehler manifolds*, **Int. J. Math. Math. Sci.,** Volume 2011, Article ID 857953, 10 pages. **(MR2793387) (SCOPUS Indexed)**

32. *On contact CR-lightlike submanifolds of indefinite Sasakian manifolds*, **Vietnam J. Math., 38**(4) (2010), 485-499. **(MR2798142) (SCOPUS Indexed)**

33. *Totally umbilical CR-lightlike submanifolds of indefinite Kaehler manifolds*, **Bull. Math. Anal. Appl., 2** (4) (2010), 54-61. **(MR2747887)**

34. *Some properties of lightlike submanifolds of semi-Riemannian manifolds*, **Demonstratio Math., 43**(3) (2010), 691-701. **(MR2683366) (ESCI & SCOPUS Indexed)**

35. *The axiom of spheres in semi-Riemannian geometry with lightlike submanifolds*, **Kodai Math. J., 32** (2009), 52–58. **(MR2518553) (SCI Indexed)**

36. *Constancy of φ-sectional curvatures of (∈)-Sasakian manifold*, **Lobachevskii J. Math., 30** (1) (2009), 76-80. **(MR2506057) (SCOPUS Indexed)**

37. *Constancy of φ–holomorphic sectional curvature in indefinite Sasakian manifolds*, **Int. Elec. J. Geom., 2** (1) (2009), 34-40. **(MR2501384)**

38. *Indefinite RK-manifolds of constant holomorphic sectional curvature*, **Int. J. Math. Anal., 3** (11) (2009), 527-534. **(MR2553966) (SCOPUS Indexed)**

39. *A note on indefinite Quasi-Kaehler manifolds with constant holomorphic sectional curvature*, **Int. J. Math. Anal., 3** (24), (2009), 1177-1182. **(MR2604357) (SCOPUS Indexed)**

40. *Generlaziation of Cartan's Lemma for indefinite K-spaces*, **Lobachevskii J. Math., 29** (1) (2008), 21-23. (**MR2411207) (SCOPUS Indexed)**

41. *Indefinite Quasi-Kaehler manifolds*, **Bull. Cal. Math. Soc., 100**(2) (2008), 177-184. **(MR2437542)**

42. *On sectional curvatures of (∈)-Sasakian manifolds*, **Int. J. Math. Math. Sci.**, (2007), Article ID 93562. **(MR2365734)** **(SCOPUS Indexed)**

43. *Conditions of constancy of holomorphic sectional curvature in an K-space*, **Ganita**, **58**(1) (2007), 41-46. **(MR2526003)**

44. *Indefinite RK-manifolds of constant type*, **South East Asian J. Math. Math. Sci.**, **5**(1) (2006), 23-28. **(MR2301675)**

45. *A note on the paper of Nirmala Parkash*, **Applied Science Periodical**, **7** (2) (2005), 135-137.

46. *The axiom of Coholomorphic 3-spheres in an indefinite K-space*, **Bull. Cal. Math. Soc.**, **97** (4) (2005), 373-376. **(MR2189605)**

47. *Indefinite RK-manifolds*, **South East Asian J. Math. Math Sci.**, **3**(2) (2005), 17-22. **(MR2205922)**

48. *A note on a Quasi- Kahler manifolds with constant holopmorphic sectional curvature,* **The Mathematics Education**, **45** (2001), 46-49.

49. *Axiom of coholomorphic 3-spheres in an indefinite kahler manifolds,* **Ganita**, Vol. 52 (1), (2001), 79-82. *Indefinite Sasakian manifolds with constant holopmorphic sectional curvature,* **Math. Student**, **63** (4), (1994), 211-214.

50. *Constancy of holopmorphic sectional curvature in indefinite almost hermition manifolds,* **Kodai Math. J.**, **16** (1993), 327-331. **(SCI Indexed)**

51. *Characterization of Indefinite Complex Space Forms,* **Math. Students**, **58** (1991), 153-156.

52. *Bochner Flat Kaehler Manifolds with commuting curvature tensors and Ricci Operator*, **Mathematical Chronicle**, **18** (1989), 53-56.

53. *Indefinite K-space of constant Holomorphic Sectional Curvature*, **Aligarh Bull. of Math.**, **11** (1986), 41-48.

54. *Almost product structure in tangent bundles*, **Aligarh Bull. of Math.**, **11** (1986), 23-30.

55. *An alternative proof to a theorem of Farran*, **Mathematical Chronicle**, (1985), 43-45.

56. *Some characterization of pseudo-complex space forms,* **Communications de la Faculte `des Sc I ` Univ. De Ankara Serie AI, Tome 33, Annee** (1984), 67-71.

57. *Constancy of holopmorphic sectional curvature in pseudo-kahler manifolds*, **Communications de la Faculte` des Sc. Ɪ` Univ.Univ. de Ankara Serie AƖ` Tome 33. Annee** (1984), 137-144.

58. *Almost Kahler manifolds of constant Holomorphic Sectional Curvature,* **Communications de la Faculte` des Sc. Ι` Univ.Univ. de Ankara Serie AΙ` Tome 33. Annee** (1984), 153-160.

59. *Basic Pre- Kahler Structures on differentiable manifolds*, **Journal of National Academy of Mathematics**, **1** (1983), 41-50.

60. *On totally real Bisectional curvature of pseudo-kahler manifolds*, **J. Mathematical Sciences**, **16** (1982), 160-164.

Details of Communicated Research Papers

1. *On induced Ricci type Tensor of GCR-Lightlike Submanifolds of indefinite Sasakian Manifolds,* **Analysis and Mathematical Physics.**

2. *Semi-invariant lightlike product manifolds of indefinite Kaehler manifolds with quarter symmetric non-metric connection,* **Journal of Korean Mathematical Society.**

3. *Study of real half lightlike submanifolds of indefinite Kaehler manifolds with quarter symmetric metric connection*, **Advances in Pure and Applied Mathematics.**

4. *Some Characterization Theorems for Lightlike Hypersurfaces of semi-Riemannian Manifolds Admitting a semi-Symmetric Non-Metric Connection*, **Int. J. Geom. Methods Mod. Phys.**

5. *Radical screen transversal lightlike submanifolds of indefinite Kaehler manifolds admitting a quarter-symmetric non-metric connection*, **Int. J. Geom. Methods Mod. Phys.**

6. *Pointwise slant lightlike submanifolds of indefinite Kaehler manifolds*, **Mediterranean Journal of Mathematics.**

7. *Study of submersions from totally umbilical semi-transversal lightlike submanifolds*, **Annals of the Alexandru Ioan Cuza University-Mathematics.**

(R.K. NAGAICH)