Dr. Mithilesh Singh

Professor
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Prof. Rajendra Singh (Rajju Bhaiya) Institute of Physical Sciences for Study & Research, Veer Bahadur Singh Purvanchal University, Jaunpur-222001 U.P., India.
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Education:

- **High school** from UP Board Allahabad (UP) -1995
- **Intermediat**e from UP Board Allahabad (UP) -1997
- **B.Sc**. (Physics & Mathematics), from H. C. P. G. College, Varanasi -2000
- **M. Sc.** inMathematics, Banaras Hindu University Varanasi: 2003
- **Ph. D.** in Mathematics, Indian Institute of Technology, BHU, Varanasi: 2010
  (Thesis Title: "Some Studies on Propagation of Nonlinear Waves in Gaseous Media").

Research Fields:

- Riemann Problems in gas dynamics
- Non-linear waves in gas dynamics;
- Solution of equation of shock waves and difference equations by HPM;
- Numerical Solution of differential equations and integral equations by operational matrix methods.
- Quantum computing

Teaching Experience: 12 years and 6 Months

- Professor (Mathematics) since Dec..2022 and onwards at Prof. Rajendra Singh (Rajju Bhaiya) Institute of Physical Sciences for Study & Research, Veer Bahadur Singh Purvanchal University, Jaunpur-222001 U.P., India.
- Assistant Professor (Mathematics) since Dec. 2017 to Dec. 2022 at Rajkiya Engineering College, Sonbhadra, U.P., India.
- Assistant Professor (Mathematics) since June. 2013 to Dec. 2017 at UPES, Dehradun, UK., India
- Assistant Professor (Mathematics) since August 2010 to May. 2013 at DIT, Dehradun, UK, India

Teaching Experience:

- Courses taught at DIT – *DEHRADUN*:

MATHS- (Engineering Mathematics and Advance Engineering Mathematics, Complex Analysis, Numerical Analysis and Statistics)

- Courses taught at *UPES- DEHRADUN*:

Introduction to MathematicalLogic, Graph Theory, Advance Engineering Mathematics, Complex Analysis, Differential Equations, Group theory, Numerical analysis and Special Functions.

- Courses taught at *REC- Sonbhadra*:

MATHS -(Engineering Mathematics -I , Engineering Mathematics -II , Engineering Mathematics -III Complex Analysis, Numerical Analysis and Statistics)

Ph. D. Guided: 02

- Shakuntala Sharma (Title of thesis-Some Aspects of nonlinear waves in gaseous media)-Degree-Awarded in 2020
- Shivani Singhal (Title of thesis- Solution of Integral equations by operational matrix method)-Degree-Awarded in 2021

The member of the Editorial Board:

- American Journal of Fluid Mechanics.
- Frontier in Astronomy and Astrophysics

The reviewers of International Journals:

- Ain Shams Engineering Journal (**Science Direct**)
- Mathematical Modelling and Analysis (**Taylor & Francis**)
- Special Topics & Reviews in Porous Media (**Begell House**)
- World Applied Sciences Journal
- Mechanics Research Communications (**Science Direct**)
- International Journal of Modern Mathematical Sciences (**USA**)
- Astrophysics and Space Science (**Springer-link**).
- ZNA.

Administrative/AcademicResponsibilities

- Head of Department of Applied Science at Rajkiya Engineering College, Sonbhadra 20.12.2017 to 19.12.2020
- O/C Library at Rajkiya Engineering College, Sonbhadra 13.02.2022 to 8.12.2022
- Grievance Redressal officer at Rajkiya Engineering College, Sonbhadra 2018-2022
- District Nodal officer of ODOP of Sonbhadra at Rajkiya Engineering College, Sonbhadra-2019-2022
- Central of Controller in Examination of AKTU in B. Tech entrance examinations-2019-2020
- Observer in CUET (UG) and CUET (PG) Exam-2022
- Observer in High Court Recruitment Exam-2022

Workshop/Short-Term Training Programs/FDP/Induction Program Attended:

- "National conference on Modern analysis and allied area" held at D.S.T. New Delhi, Centre for Interdisciplinary Mathematical Sciences, Banaras Hindu University, Varanasi, India, during Feb. 23 –24, 2007.

- "Instructional workshop on wavelet analysis" held at D.S.T. New Delhi, Centre for Interdisciplinary Mathematical Sciences, Banaras Hindu University, Varanasi, India, during Oct. 22 – Nov. 5, 2007.

- "National conference & workshop on High performance computing applications, HPCA" held at Computer Centre of the Banaras Hindu University, Varanasi, India, during on Feb. 25-27, 2008.

- Short term course on "Computer Programming using C" held at Computer Centre of the Banaras Hindu University, Varanasi, India, during September 1-6, 2008.

- Indo-German Workshop-cum-lecture series on "Computational Models and Methods Driven by Industrial Problems" in Phase-II held at IIT Madras, Chennai, India, during January 5-16, 2009.

- Workshop cum short term course on "Computational Thermal and Fluid Science & its Engineering Applications" conducted at Institute of Technology, Banaras Hindu University during May 25-30, 2009.

- Training program on "LATEX and other Open Source Software" held at D.S.T. Centre for Interdisciplinary Mathematical Sciences, Banaras Hindu University, Varanasi, India, during December 7 – 12, 2009.

- Participated in an Induction Program whichis organized by UGC HRDC, Banaras Hindu University on December 01-28, 2020 (Online mode)

- Successfully passed the three NPTEL (FDP) Courses

  (i) Introduction to method of Applied Mathematics (July-October, 2019)-12 weeks
  (ii) Integral Transform and Their Applications-(July-October, 2019)-12 weeks
  (iii) Introduction to abstract and Linear Algebra (August-October, 2019)-8 weeks

Paper presented in National/International Conference

- 3rdInternational conference on Frontiers in Industrial and Applied Mathematics (FIAM) 2020,DEC. 21-22, 2020 is organized by NIT Hamirpur.
- 86th Annual conference of the Indian Mathematical Society, An international meet (IMS-2020), Dec. 17-20, 2020, Vellore Institute of Technology
- International conference on Recent Advance in Science and Engineering (RASE-2021), Rajkiya Engineering College, Sonbhadra

Book Chapters/Proceeding in National/International Journals

- Mithilesh Singh, Nonlinear Evolution of weak discontinuity waves in Darcy-type porous media, Computing and Simulation for Engineers (CASE)" to be published by CRC Press | Taylor & Francis Group, 1st Edition, June, 2022, 199-207, 2022
- Mithilesh Singh, Nidhi Honda, Shivani Singhal, A method for singular weakly linear Volterra-Integro-differential equations by Euler polynomials, FIAM-2020 AIP Conference Proceedings, https://doi.org/10.1063/5.0083523

- Mithilesh Singh, Nidhi Honda, Shivani Singhal, Exact Solution for Mixed Integral Equations by Method of Bernoulli Polynomials, © Springer Nature Singapore Pte Ltd. 2020 N. Deo et al. (eds.), Mathematical Analysis II: Optimization, Differential Equations and Graph Theory, Springer Proceedings in Mathematics & Statistics 307, ICRAPAM-2018https://doi.org/10.1007/978-981-15-1157-8_1

National/International Conference / webinar/ Member/ Session Chair

- Conference chair for the technical session of 27th International Conference of the International Academy of Physical Sciences on Mathematical Modelling in Biological Sciences (M2BS) 2021.
- Convener in one day National Seminar in National Mathematics day-2022, VBSPU, Jaunpur
- Member in International conference on Mathematical Analysis & Applications (MAA-2020), November 02-04, 2020 organized by Department of Mathematics, NIT Jamshedpur.

List of the Publications:

1. L. P. Singh, Akmal Husain and Mithilesh Singh, Nonstandard analysis of shock wave in a non-ideal magnetogasdynamics, International Journal of Computational and Applied Mathematics(Vol. 4, Issue 1)-2009
2. L. P. Singh, Akmal Husain and Mithilesh Singh**,** Self similar solution of strong cylindrical shock wave in magnetogasdynamics: Lagrangian description, International Journal of Applied Mathematics and Computation, 194-205, 2009
3. L. P. Singh, Akmal Husain and Mithilesh Singh, "An analytical solution of imploding strong shock in a non-ideal gas through lie group analysis", Chinese Physics Letter, 27(1), 2010 Impact Factor (0.947). (Institute of Physics).
4. L. P. Singh, Akmal Husain and Mithilesh Singh, "A self-similar solution of exponential shock wave in non-ideal magnetogasdynamics", Meccanica, 46(2), 437-445, 2010 Impact Factor(1.949). (Springer Science).

5. Mithilesh Singh, L. P. Singh and Akmal Husain, "Propagation of nonlinear traveling waves in Darcy-type porous media" Acta Astronautica, 67(9-10), 1053-1058, 2010 Impact Factor (0.701) (Science Direct).
6. L. P. Singh, Mithilesh. Singh and B. D. Pandey "Analytical solution of converging shock wave in magnetogasdynamics" American Institute of Aeronautics and Astronautics, 48(11), 2523-2528, 2010Impact Factor (1.207).
7. L. P. Singh, Mithilesh Singh and Akmal Husain, "Similarity solutions of imploding shocks in non-ideal magnetogasdynamics", Astrophysics and Space Science, 331, 597-603, 2011 Impact Factor (2.263). (Springer Science).
8. L. P. Singh, Akmal Husain and Mithilesh Singh, "On the evolution of weak discontinuities in non-ideal gas with radiative heat transfer", Communication in Nonlinear Science and Numerical Simulation, 16(2), 690-697, 2011 Impact Factor (2.834), (Science Direct).
9. L. P. Singh, Akmal Husain and Mithilesh Singh, "On the evolution of weak discontinuities in radiative magnetogasdynamics", Acta Astronautica, 68(1-2), 16-21, 2011 Impact Factor (0.701),(Science Direct).
10. L. P. Singh, Mithilesh Singh and Akmal Husain "Nonstandard analysis of converging shock wave in non-ideal gas" Journal of Engineering Physics and Thermo physics, 84(1), 4-12, 2011 Impact Factor (0.556),(Springer Science).
11. P. K. Gupta and Mithilesh Singh, "Homotopy perturbation method for fractional Fornberg-Whitham equation", Computers Mathematics with Applications, 61,250-254, 2011 Impact Factor(1.697).(Science Direct).
12. Mithilesh Singh, L. P. Singh and Akmal Husain, Landau-Stanyukovich rule and the similarity parameter of converging shock waves in magnetogasdynamics, Chinese Physics Letter, 28(9), 094701, 2011 Impact Factor (0.947), (Institute of Physics).
13. Mithilesh Singh and P. K. Gupta, "Homotopy perturbation method for time-fractional shock wave equation", Adv. Appl. Math. Mech., 3(6), 774-783, 2011 Impact Factor (0.626), (Global Science).
14. Mithilesh Singh and A. Yildrim, "Reliable Analysis for Fractional Coupled Nonlinear Evolution Equations, World Applied Sciences Journal, 19(12), 1806-1912, 2012.

15. Mithilesh Singh, L. P. Singh and Akmal Husain “Nonstandard analysis of Converging shock wave in a dusty gas”, 3(3), 313–319, 2012 ASEJ, (Science Direct) .
16. Mithilesh Singh, “Similarity parameter of converging shock waves in non-ideal magnetogasdynamics by Landau-Stanyukovich rule”, Astrophysics and Space Science, 343, (2), 615-619, 2013Impact Factor (2.263). (Springer Science).
17. R. N. Prajapati, Mithilesh Singh, R. Mohan, “Homogeneous balance method for Fornberg-Whitham(FM) equation”, International Journal of Advanced Research in Engineering and Applied Sciences, 2(2), 10-17, 2013.
18. Mithilesh Singh andR. N. Prajapati, “Reliable analysis for time-fractional nonlineardifferential difference equations, Central European Journal of Engineering, 3(4), 690-699, 2013,(Springer Science).
19. Mithilesh Singh and Akmal Husain, “Converging shock wave in Darcy-type porous medium through nonstandard analysis”, International Journal of Applied Mathematics and Computation, Volume 5(2) 1–8, 2013
20. Mithilesh Singh, “Evolution of weak discontinuity in presence of entropygradients in radiating gas”, International Journal of Applied and Computational Mathematics, DOI 10.1007/s40819-015-0108-9, 2015(Springer Science).
21. P.K. Gupta, Mithilesh Singh and A. Yildirim, “Approximate analytical solution of the time-fractional Camassa-Holm, modified Camassa-Holm, and Degasperis-Procesi equations by homotopyperturbation method”, Scientia Iranica A 23(1), 155-165, 2016, Impact Factor (1.05).
22. Nidhi Handa, Mithilesh Singh, Shakuntla Sharma, Reliable analysis of Riemann solver in ideal magnetogasdynamics using arithmetic averaging, International Journal of Pure and Applied Mathematics118(22), 1325-1337, 2018
23. Mithilesh Singh, Nidhi Handa, Shakuntla Sharma, A Riemann Solver with Arithmetic Averaging for One-dimensional Problem in Dusty gas, Advances and Applications in Mathematical Sciences, 18(1), 141-152 2018,
24. Mithilesh Singh, N Handa, S Singhal, Exact and Numerical Solution of Abel Integral Equations by Orthonormal Bernoulli polynomials, International Journal of Applied and Computational Mathematics, 2020. DOI: 10.1007/s40819-019-0734-8, (Springer Science).

25. Mithilesh Singh, S. Seema, S. Rawan, Solution of Linear Differential Equations Using Operational Matrix of Bernoulli Orthogonal Polynomials, Poincare Journal of Analysis & Applications, 2020,
26. Mithilesh Singh, S. Seema, S. Rawan, An efficient algorithm to solve damped forced oscillator problems by Bernoulli operational matrix of integration, Journal of the Egyptian Mathematical Society, 29 (1), 1-11, 2021, (Springer Science).

(MITHILESH SINGH)