

# Curriculum Vitae

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## **Dr. Rajesh Kumar Gupta**

**Associate Professor**

Department of Mathematics

School of Physical and Mathematical Sciences

Central University of Haryana,

Jant-Pali, Mahendergarh-123029

Haryana, INDIA

Email ID: [rajeshateli@gmail.com](mailto:rajeshateli@gmail.com)

[rajeshgupta@cuh.ac.in](mailto:rajeshgupta@cuh.ac.in)



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**Google Scholar:** [https://scholar.google.co.in/citations?user=wZY\\_CukAAAAJ&hl=en](https://scholar.google.co.in/citations?user=wZY_CukAAAAJ&hl=en)

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## **Educational Qualifications/ Academic Achievements**

- **Ph.D. (Mathematics)** from Jaypee University of Information Technology, Waknaghat, Solan (H.P.) in 2007  
  
**Title of the Thesis:** Lie Symmetries and Exact Solutions of Some Nonlinear Partial Differential Equations  
  
**Supervisor:** Prof. Karanjeet Singh
- CSIR- UGC Junior Research Fellowship (**JRF**) and Eligibility for Lectureship National Eligibility Test (**NET**) in Mathematical Sciences held on July 1, 2001
- **GATE** (Graduate Aptitude Test in Engineering) examination conducted by Indian Institute of Technology, Kanpur with **88.25** percentile in 2001
- **M.Sc. (Applied Mathematics)** from Guru Jambheshwar University, Hisar, Haryana in 2001 with 64.13 % marks
- **B.Sc. (Non-Medical)** from Maharshi Dayanand University, Rohtak, Haryana in 1999 with 64.07 % marks
- **Senior Secondary (Non-Medical)** from Board of School Education, Haryana in 1996 with 60.25 % marks
- **Matriculation** from Board of School Education, Haryana in 1994 with 73.75% marks

## Teaching Experience (Graduate/ Postgraduate)

- Working as an Associate Professor (Mathematics) in Department of Mathematics at **Central University of Haryana**, Mahendergarh since November 01, 2018
- Worked as an Associate Professor (Mathematics) in Centre for Mathematics & Statistics at **Central University of Punjab**, Bathinda since December 28, 2015 to October 31, 2018
- Worked as an Assistant Professor (Mathematics) in School of Mathematics & Computer Applications at **Thapar University**, Patiala since June 13, 2007 to December 28, 2015
- Worked as a Lecturer in Mathematics at **Institute of Technology & Management (ITM)**, Gurgaon, since July 15, 2005 to May 31, 2007

## Ph.D. Theses Supervision

### Completed: 08

- Dr. Sachin Kumar (July 19, 2012):  
Thesis Title: Symmetries and Exact Solutions of Nonlinear Partial Differential Equations (Jointly guided with Dr. Karanjeet Singh)  
Current Placement: Assistant Professor (Regular), Central University of Punjab, Bhatinda, Punjab
- Dr. Nisha Goyal (October 17, 2012):  
Thesis Title: Symmetries and Exact Solutions of Einstein Vacuum Field Equations and Einstein-Maxwell Equations  
Current Placement: Dr. D.S. Kothari Post-Doctoral Fellow (MA/15-16/0011), Punjab University, Chandigarh
- Dr. Anupma (April 11, 2013):  
Thesis Title: Lie Group Applications to Some Nonlinear Systems  
Current Placement: Assistant Professor (Regular), D.A.V. College for Women, Ferozepur, Punjab.
- Dr. Lakhveer Kaur (November 13, 2013):  
Thesis Title: Group Theoretic Techniques for Solutions of Einstein Equations

Current Placement: Assistant Professor (Regular, Grade-1), Jaypee Institute of Information Technology, Noida, U.P.

■

Dr. Vikas Kumar (November 22, 2014):

Thesis Title: Exact and Numerical Solutions of Some Nonlinear Partial Differential Equations

(Jointly guided with Dr. Ramjiwari)

Current Placement: Assistant Professor (Regular), D.A.V. College, Pundari, Kaithal, Haryana

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Dr. Rajeev (January 1, 2016):

Thesis Title: Group Theoretic Techniques and Their Applications to Some Nonlinear Systems

(Jointly guided with Dr. S.S. Bhatia)

Current Placement: Assistant Professor (Regular), Maharishi Markandeshwar University, Mullana, Ambala, Haryana

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Dr. Komal Singla (November 1, 2017):

Thesis Title: Symmetry Analysis of Nonlinear Fractional Partial Differential Equations

Current Placement: Research Associate, Thapar University, Patiala, Punjab

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Dr. Manjit Singh (October 26, 2018):

Thesis Title: Symmetry Analysis of Nonlinear Fractional Partial Differential Equations

Current Placement: Associate Professor, Yadavindra College of Engineering, Punjabi University Guru Kashi Campus, Talwandi Sabo, Punjab

### **Submitted: 01**

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Mr. Ram Paul Hathwal: Efficient Algorithms for Image Denoising using Wavelets (Jointly with Dr. Singara Singh)

### **Ongoing: 02**

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Mrs. Bikramjeet Kaur: Symmetry Analysis and Conservation Laws for Some Systems of Nonlinear Partial Differential Equations,

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Ms. Pinki Kumari: Invariant Analysis and Conservation Laws to Some Nonlinear Mathematical Model

## **Sponsored Research Projects (Completed/ Ongoing)**

**Projects Types:** Theoretical research

**Number of Completed Research Project: 01**

**Number of Ongoing Research Project: 02**

- **Project Title:** Symmetry Analysis and Exact Solutions of Some Nonlinear Systems from Mathematical Physics  
**Grant No. :** F. 30-105/2016 (SA-II)  
**Duration:** 01.06.2016 to 31.05.2018  
**Funding Agency:** University Grants Commission (UGC), New Delhi  
**Project Grant:** 3 Lacs Contingency + 2 Years' Salary  
**Status:** Completed
  
- **Project Title:** Applications of Group Theoretic Techniques to Some Nonlinear Systems from Mathematical Physics  
**Grant No. :** 25(0257)/16/EMR-II  
**Duration:** 01.10.2016 to 31.09.2019  
**Funding Agency:** Council of Scientific and Industrial Research (CSIR), New Delhi  
**Project Grant:** 16.96 Lacs  
**Status:** Ongoing
  
- **Project Title:** Lie Symmetry Analysis and Exact Solutions of Some Einstein Field Equations  
**Grant No. :** 2/48(16)/2016/NBHM (R.P.)/R&D II/14982  
**Duration:** 10.11.2016 to 09.11.2019  
**Funding Agency:** National Board for Higher Mathematics (NBHM), Department of Atomic Energy, Mumbai  
**Project Grant:** 14.14 Lacs  
**Status:** Ongoing

## List of Research Papers (Journals) (TIF – 98.427)

1. K. Singh and **R. K. Gupta**, On symmetries and invariant solutions of a coupled KdV system with variable coefficients, *International Journal of Mathematics and Mathematical Sciences* 23 (2005) 3711-3726.
2. K. Singh and **R. K. Gupta**, Lie symmetries and exact solutions of a new generalized Hirota-Satsuma coupled KdV system with variable coefficients, *International Journal of Engineering Science* 44 (2006) 241-255. (**Impact Factor 7.023**)
3. K. Singh and **R. K. Gupta**, Exact solutions of a variant Boussinesq system, *International Journal of Engineering Science* 44 (2006) 1256-1268. (**Impact Factor 7.023**)
4. **R. K. Gupta** and K. Singh, Modified Boussinesq system with variable coefficients: classical Lie approach and exact solutions, *Journal of Partial Differential Equations* 22 (2009) 97-110.
5. **R. K. Gupta** and Anupma, The Dullin-Gottwald-Holm Equation: Classical Lie Approach and Exact Solutions, *International Journal of Nonlinear Science* 10(2) (2010) 146 - 152.
6. K. Singh, **R. K. Gupta** and Sachin Kumar, Benjamin-Bona-Mahony (BBM) equation with variable coefficients: similarity reductions and Painlevé analysis, *Applied Mathematics and Computation* 217 (2011) 7021-7027. (**Impact Factor 2.300**)
7. **R. K. Gupta** and K. Singh, Symmetry analysis and some exact solutions of cylindrically symmetric null fields in general relativity, *Communications in Nonlinear Science and Numerical Simulation* 16 (2011) 4189-4196. (**Impact Factor 3.181**)
8. K. Singh, **R. K. Gupta** and Sachin Kumar, “Exact Solutions of b-family Equation: Classical Lie Approach and Direct Method”, *International Journal of Nonlinear Science* 11 (1) (2011) 59-67.
9. **R.K. Gupta** S.S. Bhatia and Rajeev, “New Exact Traveling Wave Solutions to the Ostrovsky Equations”, *International Journal of Applied Mathematics and Mechanics* 2 (1-2) (2011) 27-33.
10. Sachin Kumar, K. Singh and **R. K. Gupta**, Painlevé analysis, Lie symmetries and exact solutions for (2+1) dimensional variable coefficients Broer-Kaup equations, *Communications in Nonlinear Science and Numerical Simulation* 17 (2012) 1529-1541. (**Impact Factor 3.181**)

11. Nisha Goyal and **R. K. Gupta**, A class of exact solutions of Einstein field equations, *Physica Scripta* 85 (2012) 055011 (6pp). (**Impact Factor 1.902**)
12. Nisha Goyal and **R. K. Gupta**, New exact solutions of Einstein-Maxwell equations for magnetostatic fields, *Chinese Physics B* 21 (2012) 090401-6. (**Impact Factor 1.321**)
13. Nisha Goyal and **R. K. Gupta**, “On Symmetries and Exact Solutions of Einstein Vacuum Equations for Axially Symmetric Gravitational Fields”, *International Journal of Mathematical, Computational, Physical, Electrical and Computer Engineering* 6(8) (2012) 838-841.
14. Anupma Bansal and **R. K. Gupta**, “On Symmetry Analysis and Exact Wave Solutions of New Modified Novikov Equation”, *International Journal of Mathematical, Computational, Physical, Electrical and Computer Engineering*, 6(8) (2012) 1173-1180.
15. Nisha Goyal and **R. K. Gupta**, Traveling wave solutions for the Sawada-Kotera-Kadomtsev-Petviashvili equation and Bogoyavlensky-Konoplechenko equation by (G'/G)-expansion method, *International Journal of Mathematical, Computational, Physical, Electrical and Computer Engineering* 6(8) (2012) 1198-1202.
16. Anupma Bansal and **R. K. Gupta**, “On Certain New Exact Solutions of (2+1)-Dimensional Calogero Degasperis Equation via Symmetry Approach” *International Journal of Nonlinear Science* 13 (4) (2012) 475-481.
17. Sachin Kumar, K. Singh and **R. K. Gupta**, Coupled Higgs field equation and Hamiltonian amplitude equation: Lie classical approach and (G'/G)-expansion method, *Pramana-Journal of Physics* 79 (2012) 41-60. (**Impact Factor 0.699**)
18. Anupma Bansal and **R.K. Gupta**, Lie point symmetries and similarity solutions of the time dependent coefficients Calogero Degasperis equation, *Physica Scripta* 86 (2012) 035005. (**Impact Factor 1.902**).
19. Nisha Goyal and **R. K. Gupta**, Symmetries and exact solutions of the nondiagonal Einstein-Rosen metrics, *Physica Scripta* 85 (2012) 015004 (6pp). (**Impact Factor 1.902**)
20. Rajeev, **R.K. Gupta** and S. S. Bhatia, The new generalized (G'/G) - expansion method for solving (2+1) dimensional PKP equation, *International Journal of Nonlinear Science* 14 (1) (2012) 48-52.

21. Anupma Bansal and **R. K. Gupta**, Modified (G'/G)-expansion method for finding exact wave solutions of the coupled Klein-Gordon- Schrödinger equation, *Mathematical Methods in the Applied Sciences* 35 (10) (2012) 1175-1187. **(Impact Factor 1.180)**
22. **R. K. Gupta**, Sachin Kumar and Bhajan Lal, New exact travelling wave solutions of generalised sinh-Gordon and (2 + 1)-dimensional ZK-BBM equations, *Maejo International Journal of Science and Technology* 6 (2012) 344-355. **(Impact Factor 0.469)**
23. **R. K. Gupta** and Anupma Bansal, Similarity reductions and exact solutions of generalized Bretherton equation with time dependent coefficients, *Nonlinear Dynamics* 71 (2013) 1-12. **(Impact Factor 4.339)**
24. Lakhveer Kaur and **R. K. Gupta**, Kawahara equation and modified Kawahara equation with time dependent coefficients: symmetry analysis and generalized G'/G-expansion method, *Mathematical Methods in the Applied Sciences* 36 (2013) 584-600. **(Impact Factor 1.180)**
25. **R.K. Gupta** and Anupma Bansal, Painlevé analysis, Lie symmetries and invariant solutions of potential Kadomstev Petviashvili equation with time dependent coefficients, *Applied Mathematics and Computation* 219 (2013) 5290-5302. **(Impact Factor 2.300)**
26. Lakhveer Kaur and **R. K. Gupta**, Painlevé analysis, similarity reductions and exact solutions of the Kuramoto-Sivashinsky equation with variable coefficients, *International Journal of Nonlinear Sciences* 15 (2) (2013) 139-149.
27. Lakhveer Kaur and **R. K. Gupta**, On symmetries and exact solutions of Einstein Maxwell field equations via symmetry approach, *Physica Scripta* 87 (2013) 035003. **(Impact Factor 1.902)**
28. Vikas Kumar, **R. K. Gupta** and Ram Jiware, Comparative study of travelling wave and numerical solutions for the coupled short pulse (CSP) equation, *Chinese Physics B* 22(5) (2013) 050201. **(Impact Factor 1.321)**
29. Lakhveer Kaur and **R. K. Gupta**, Symmetries and exact solutions of Einstein field equations for perfect fluid distribution and pure radiation fields, *Maejo International Journal of Science and Technology* 7 (2013) 133-144. **(Impact Factor 0.469)**

30. Vikas Kumar, Ram Jiwari and **R. K. Gupta**, Numerical simulation of two dimensional quasilinear hyperbolic equations by polynomial differential quadrature method, *Engineering Computations* 30 (2013) 892-909. (**Impact Factor 1.177**)
31. Vikas Kumar, **R. K. Gupta** and Ram Jiwari, Painlevé analysis, Lie symmetries and exact solutions for variable coefficients Benjamin-Bona-Mahony-Burger (BBMB) equation, *Communications in Theoretical Physics* 60 (2013) 175-182. (**Impact Factor 1.178**).
32. Lakhveer Kaur and **R. K. Gupta**, On certain new exact solutions of Einstein equations for axisymmetric rotating fields, *Chinese Physics B* 22 (2013) 100203-100208. (**Impact Factor 1.321**).
33. Sachin Kumar, K. Singh and **R. K. Gupta**, Dynamics of internal waves in a stratified ocean modeled by the extended Gardner equation with time-dependent coefficients, *Ocean Engineering* 70 (2013) 81-87. (**Impact Factor 2.214**)
34. Vikas Kumar, **R. K. Gupta**, and Ram Jiwari, Lie group analysis, numerical and non-traveling wave solutions for the (2+1)-dimensional diffusion–advection equation with variable coefficient, *Chinese Physics B* 23 (2014) 030201. (**Impact Factor 1.321**)
35. Lakhveer Kaur and **R. K. Gupta**, Some invariant solutions of field equations with axial symmetry for empty space containing an electrostatic field, *Applied Mathematics and Computation* 231 (2014) 560-565. (**Impact Factor 2.300**)
36. Rajeev, **R.K. Gupta** and S. S. Bhatia, Lie symmetry analysis and exact solutions for a variable coefficient generalized Kuramoto-Sivashinsky equation, *Romanian Reports in Physics* 66 (2014) 923-928. (**Impact Factor 1.582**)
37. Rajeev, **R.K. Gupta** and S. S. Bhatia, Symmetry analysis and some solutions of Gowdy equation, *Romanian Journal of Physics* 60 (2015) 15-21. (**Impact Factor 1.433**)
38. Ram Jiwari, **R. K. Gupta** and Vikas Kumar, Polynomial differential quadrature method for numerical solutions of the generalized Fitzhugh-Nagumo equation with time-dependent coefficients, *Ain Shams Engineering Journal* 5 (2014) 1343-1350.
39. **R. K. Gupta**, Vikas Kumar, and Ram Jiwari, Exact and numerical solutions of coupled short pulse equation with time dependent coefficients, *Nonlinear Dynamics* 79 (2015) 455-464. (**Impact Factor 4.339**)



40. Rajeev, **R.K. Gupta** and S. S. Bhatia, Painlevé analysis and some solutions of variable coefficients Benny equation, *Pramana-Journal of Physics* 85 (2015) 1111-1122. **(Impact Factor 0.699)**
41. Manjit Singh and **R. K. Gupta**, Explicit exact solutions for variable coefficient Broer–Kaup equations, *Computational Methods for Differential Equations* 3 (2015) 192-199.
42. Nisha Goyal, A.M. Wazwaz and **R. K. Gupta**, Applications of MAPLE software to derive exact solutions of generalized fifth – order Korteweg – de Vries equation with time- dependent coefficients, *Romanian Reports in Physics* 68 (2016) 99-111. **(Impact Factor 1.582)**
43. Ram Paul Hathwal, **Rajesh Kumar Gupta** and Singara Singh Kasana, Performance analysis of impulse denoising techniques in magnetic resonance imaging, *International Journal of Computer Applications* 136 (2016) 17-22.
44. Rajeev, **R.K. Gupta** and S. S. Bhatia, Invariant solutions of variable coefficients generalized Gardner equation, *Nonlinear Dynamics* 83 (2016) 2103-2111. **(Impact Factor 4.339)**
45. Manjit Singh and **R. K. Gupta**, Bäcklund transformations, Lax system, conservation laws and multisoliton solutions for Jimbo–Miwa equation with bell-polynomials, *Communications in Nonlinear Science and Numerical Simulation* 37 (2016) 362-373. **(Impact Factor 3.181)**
46. Manjit Singh and **R. K. Gupta**, Exact solutions for nonlinear evolution equations using novel test function, *Nonlinear Dynamics* 86 (2016) 1171-1182. **(Impact Factor 4.339)**
47. Komal Singla and **R. K. Gupta**, On invariant analysis of some time fractional nonlinear systems of partial differential equations. I, *Journal of Mathematical Physics* 57 (2016) 101504 (1-14). **(Impact Factor 1.165)**
48. **R. K. Gupta** and Manjit Singh, Nonclassical symmetries and similarity solutions of variable coefficient coupled KdV system using compatibility method, *Nonlinear Dynamics* 87 (2017) 1543-1552. **(Impact Factor 4.339)**
49. Manjit Singh and **R. K. Gupta**, Soliton and quasi-periodic wave solutions for B-type Kadomtsev–Petviashvili equation, *Indian Journal of Physics*, 91 (2017) 1345-1354 **(Impact Factor 0.967)**

50. Komal Singla and **R. K. Gupta**, Space-time fractional partial differential equations: symmetry analysis and conservation laws, *Nonlinear Dynamics*, 89 (2017) 321-331. **(Impact Factor 4.339)**
51. **R. K. Gupta** and Manjit Singh, On group classification and nonlocal conservation laws for a multi phase flow model, *International Journal of Applied and Computational Mathematics*, 3 (2017) 3925-3935.
52. Komal Singla and **R. K. Gupta**, On invariant analysis of some nonlinear systems of space-time fractional partial differential equations. II, *Journal of Mathematical Physics*, 58 (2017) 051503 (1-11). **(Impact Factor 1.165)**
53. Komal Singla and **R. K. Gupta**, Generalized Lie symmetry approach for nonlinear systems of fractional differential equations. III, *Journal of Mathematical Physics*, 58 (2017) 061501 (1-14). **(Impact Factor 1.165)**
54. Komal Singla and **R. K. Gupta**, Comments on “Lie symmetries and group classification of a class of time fractional evolution systems”, *Journal of Mathematical Physics*, 58 (2017) 054101 (1-5) **(Impact Factor 1.165)**
55. Komal Singla and **R. K. Gupta**, Conservation laws for certain time fractional nonlinear systems of partial differential equations, *Communications in Nonlinear Science and Numerical Simulation* 53 (2017) 10-21. **(Impact Factor 3.181)**
56. Manjit Singh and **R. K. Gupta**, On Painlevé analysis, symmetry group and conservation laws of Date–Jimbo–Kashiwara–Miwa equation, *International Journal of Applied and Computational Mathematics*, 4 (2018) 88.
57. **R. K. Gupta** and Komal Singla, Symmetry analysis of variable coefficient time fractional systems of partial differential equations, *Theoretical and Mathematical Physics*, **Accepted**, **(Impact Factor 0.851)**
58. Ram Paul, Singara Singh Kasana and **Rajesh Kumar Gupta**, An edge-preserving adaptive image denoising using discrete wavelet transform techniques in magnetic resonance imaging, *International Journal of Imaging and Robotics* 18 (2018) 155-164.
59. Bikramjeet Kaur and **R. K. Gupta**, Invariance properties, conservation laws and soliton solutions of the time fractional (2+1)-dimensional new coupled ZK system in magnetized dusty plasmas, *Computational and Applied Mathematics*, <https://doi.org/10.1007/s40314-018-0674-7>. **(Impact Factor 0.863)**

60. Manjit Singh and **R. K. Gupta**, Group classification, conservation laws and Painleve analysis for Klein-Gordon-Zakharov equations in (3+1)-dimension, *Pramana-Journal of Physics Accepted (Impact Factor 0.699)*
61. Manjit Singh and **R. K. Gupta**, Explicit exact solutions for variable coefficient Gardner equation: An application of Riccati equation mapping method, *International Journal of Applied and Computational Mathematics*, 4 (2018) 88.
62. **R. K. Gupta** and Manjit Singh, On invariant analysis and conservation laws for degenerate coupled multi-KdV equations for multiplicity  $l = 3$ , *Pramana-Journal of Physics Accepted (Impact Factor 0.699)*
- 63.
- 64.

#### Research Papers (International Conference)

1. K. Singh and **R. K. Gupta**, Explicit exact solutions of a non-evolution equation, *Interdisciplinary Mathematics on Interdisciplinary Mathematical and Techniques (IMST 2009 – FIM XVIII)*, August 2-4, 2009.
2. **R. K. Gupta** and Sachin Kumar, Modified  $b$ -equation: classical Lie approach and exact solution, *Interdisciplinary Mathematics on Interdisciplinary Mathematical and Techniques (IMST 2009 – FIM XVIII)*, August 2-4, 2009.
3. K. Singh, **R. K. Gupta**, Sachin Kumar, and Anupma, Symmetry reductions and exact solutions of modified  $b$ -family, *Satellite Conference of International Congress of Mathematicians 2010 on Mathematics in Science & Technology*, August 14-17, 2010. Published in *Indian Journal of Industrial and Applied Mathematics* 4 (2013) 52-60.
4. **R. K. Gupta**, Sachin Kumar, and Anupma, Symmetries and exact solutions of third order partial differential equations arising in the impulsive motion of flat plate, *Satellite Conference of International Congress of Mathematicians 2010 on Mathematics in Science & Technology*, August 14-17, 2010. Published in *Indian Journal of Industrial and Applied Mathematics*, 3 (2012) 13-21.
5. Nisha Goyal and **R. K. Gupta**, Similarity analysis and new exact solutions of the Einstein-Maxwell equations for the non-static Einstein and Rosen metrics, *Proceedings of International Conference on Mathematics and Statistics-2012*

(ICOMAS-2012), May 15-18, 2012, Department of Mathematics, University of Memphis, Memphis, TN, USA

6. Nisha Goyal and **R. K. Gupta**, Traveling wave solutions for the Kadomtsev-Petviashvili-Benjamin-Bona-Mahony equation and the Ito equations by  $(G'/G)$ -expansion method, *Proceedings of International Conference on Emerging Trends in Engineering and Management (ICETEM-2012)*, Satpriya Group of Institutions, Rohtak (Haryana), June 23-24, 2012, pp. 423-428. ISBN: 978-981-07-2631-7 doi:10.3850/978-981-07-2631-7 P059
7. Anupma and **R. K. Gupta**, Construction of new traveling wave solutions of Ostrovsky-Benjamin-Bona-Mahony equation using modified extended tanh-function method, *Proceedings of the International Conference on Emerging Trends in Engineering and Management (ICETEM-2012)*, Satpriya Group of Institutions, Rohtak (Haryana), June 23-24, 2012, pp. 420-423. ISBN: 978-981-07-2631-7 doi:10.3850/978-981-07-2631-7 P059

## Awards/Honors

- **UGC Research Award** by University Grants Commission (UGC), New Delhi for the period 2016-2018
- Listed in **Marquis Who's Who**, 2014, 2015, 2018
- Selected for official **2018 Albert Nelson Marquis Lifetime Achievement Award** by **Marquis Who's Who**
- *The Cambridge Certificate* for Outstanding Scientific Achievement by International Biographical Centre, Cambridge, England 2016.
- *Great Men and Women of Science* by International Biographical Centre 2015.
- Awarded **PIS (Performance Incentive Scheme)** for five consecutive years (2009-2013) at Thapar University, Patiala for the academic excellence (teaching and research)

## Books/Chapters & Lab Manuals

- **Rajesh Kumar Gupta**, *Numerical Methods*, Cambridge University Press, Proof Reading ongoing
- R Kumar, A Bansal and **R K Gupta**, Some Solutions of Generalised Variable Coefficients KdV Equation by Classical Lie Approach, pp 309-319, In: Applied Analysis in Biological and Physical Sciences, Springer, December 2016, ISBN 978-81-322-3640-5
- **Rajesh Gupta**, “Symmetries and Exact Solutions for Nonlinear Systems: Variable Coefficients KdV and Boussinesq Systems”, Lambert Academic Publishing, April 2012, ISBN 978-3-8484-2756-7
- **Rajesh Gupta**, “Applied Numerical Methods Lab Manual” published through Department of Applied Sciences and Humanities, ITM, Gurgaon, 2006
- **Rajesh Gupta** and Naveen Adalakhia, “Numerical Techniques Lab Manual” published through Department of Applied Sciences and Humanities, ITM, Gurgaon, 2006
- At present, writing a book on “Numerical Techniques”.

## Invited Talks

1. Deliver two Expert Lectures on the Topic of “Differential Equations” for Faculty Development Program on “Engineering Mathematics” organized by the Rayat Bahra Institute of Engineering & Bio-Technology, Mohali from July 14 – 18<sup>th</sup>, 2014.
2. Deliver an expert talk (October 18, 2013) on the Topic of “Numerical Solutions of PDEs” in TEQIP sponsored Short Term Training Program on “Hands on Training on Computational Fluid Dynamics” (CFD-2013) organized by Mechanical Engineering Department, Thapar University, Patiala held on 18-20 October 2013.
3. Deliver an expert lecture on the Topic of “Graphing in MATLAB” in one day workshop titled “Introduction to MATLAB” organized by Institution of Engineers (India) Thapar University Chapter on 26 October 2013.
- 4.

## **Workshops / Short Term Courses / FDP Attended**

1. **Faculty Development Program** on “Effective Lecture Design and Delivery” organized by the Center for Academic Excellence & Planning, ITM University (Formerly Institute of Technology and Management), Gurgaon from July 6-19, 2006 (4-days).
2. **SPSS 17.0 FDP** organized by SPSS South Asia and L M Thapar School of Management, Thapar University, Patiala on January 30-31, 2009.
3. **Prof. Summit** on “Embedded System Design using Atmel XMEGA XPLD A1 and ARM-based SAM 4L” organized by Atmel India University Program at Thapar University, Patiala from July 15-16, 2013.
4. **Workshop** on “Applications of MATLAB in Engineering” in the Department of Electronic and Communication Engineering, Thapar University, Patiala on August 24-25, 2013.
5. TEQIP sponsored **Short Term Training Program** on “Basics and Application of Computational Fluid Dynamics” (BCFD-2013) organized by Mechanical Engineering Department, Thapar University, Patiala held on August 30-31, 2013.
6. TEQIP sponsored **Short Term Training Program** on “Hands on Training on Computational Fluid Dynamics” (CFD-2013) organized by Mechanical Engineering Department, Thapar University, Patiala held on October 18-20, 2013.
7. **Workshop** on “Introduction to MATLAB” organized by Institution of Engineers (India) and Thapar University, Patiala on October 26-27, 2013
8. **NCM Workshop** on “Conservation Laws with Applications to Continuum Mechanics” organized by National Center for Mathematics and Department of Mathematics, Punjab University, Chandigarh on December 2-7, 2014.
9. **Short Term Course** on “Dynamical Systems and Control” organized by IIT, Roorkee from June 29, 2015 to July 10, 2015.
10. **NCM Workshop** on “Partial Differential Equations of Fractional Order” organized by National Center for Mathematics and TIFR Centre for Applicable Mathematics, Bangalore on July 6-18, 2015.

**11. Faculty Development Program** on “Maple Software” conducted at Central University of Punjab in collaboration with Maplesoft and Binary Semantics on June 15, 2017

**M.Sc. Theses Supervision (Completed)**

1. Symmetries and Exact Solutions of Some Systems of Nonlinear Partial Differential Equations by Lie Classical Method, Ms. Ritika Garg (2014)
2. Symmetries and Exact Solutions of Some Nonlinear Partial Differential Equations by Symmetry Reduction Method, Ms. Kimandeep Kaur (2014)
3. Classical Method for Some Nonlinear Systems, Ms. Anu Punj (2012)
4. Symmetry Reduction Method for Nonlinear Partial Differential Equations, Ms. Seema Kumari (2012)
5. Exact Travelling Wave Solutions for Some Nonlinear Partial Differential Equations, Mr. Bhajan Lal (2011)
6. Study of Two-Unit Cold Standby Systems with Regenerative Point Technique, Ms. Neetu Rani (2011) (Jointly guided with Dr. Jitender Kumar)
7. Symmetry Reduction Method for Exact Solutions of Some Nonlinear Systems, Ms. Bikramjeet (2010)
8. Exact Solutions of Nonlinear Partial Differential Equations (PDEs), Ms. Shivali (2010)
9. Lie Classical Symmetries for Some Nonlinear PDEs, Ms. Payal (2010)
10. Geometry of Generic Submanifolds, Ms. Jagdeep (2009) (Jointly guided with Dr. M.A. Khan)
11. Geometry of CR-Submanifolds, Ms. Manjot (2009) (Jointly guided with Dr. M.A. Khan)
12. Fault Tree Analysis of Different Systems, Mr. Ankush (2009) (Jointly guided with Dr. Amit Kumar)

## Membership of Professional Bodies

- Official Ambassador of Faculty Development Program on “Maple Software” conducted at Central University of Punjab in collaboration with Maplesoft and Binary Semantics on June 15, 2017
- Membership of International Association of Mathematical Physics for the year 2017.
- Life membership of Indian Mathematical Society (Membership No. **L/2014/099**)
- Editorial Board member of Journal *Waves in Engineering, Science and Technology* (WEST) by American Scientific Publishers
- Associate Editor of *International Journal of Advances in Mathematics*.

## Administrative Works

- Coordinator of Centre, Centre for Mathematics and Statistics, Central University of Punjab, Bathinda from January 04, 2016 to July 11, 2016
- Chairman, Board of Studies, Centre for Mathematics and Statistics held on May 18, 2016
- Chairman, Academic and Administrative Committee, Centre for Mathematics and Statistics from January 04, 2016 to July 11, 2016
- Member, School Board, School of Basic and Applied Sciences for 2016-17
- Ph.D. Coordinator of School of Mathematics from July 2015 to December 2015
- Coordinator of School Information/ Profile, Annual Report, News Caster and Other related activities at SMCA, Thapar University (2013-2014).
- Coordinator for School Information/ Profile, Annual Report, News Caster and Other related activities at SMCA, Thapar University (2012-13)
- Member Secretary of SPPC (School Planning and Policy Committee) of SMCA, Thapar University (2014-15)
- Finance Secretary of Senior Staff Club at Thapar University (2011-2014)
- Member, Board of Studies of SMCA held on January 18, 2012 for M.Sc. Integrated Programme in Mathematics and Computing



- Student Counselor of SMCA, Thapar University (2011-12) (2012-13)
- ISO-Coordinator of SMCA, Thapar University (2010-11).
- Successfully organized the cultural fests Saturnalia-2010 and Saturnalia-2011 (Among Largest Cultural Fest of North India) at Thapar University as Faculty Advisor.
- Vice President of Mudra Society at Thapar University from 2011-13.
- Timetable Coordinator of SMCA, Thapar University (2011-12).

### **Computer Skills**

- Mathematical Software- MAPLE and MATHEMATICA: Currently using these software for research (graphs, solutions of differential equations, integrations and implement some method in MAPLE etc.).
- Knowledge of C-language (programming in C-language for various numerical methods), MS-Office (Power Point, Word, Excel) etc.

### **Teaching Interest**

- Basic and Advanced Courses on Numerical Methods with C-Programming Labs
- Ordinary and Partial Differential Equations
- Courses on Engineering Mathematics
- Complex Analysis
- Linear and Abstract Algebra

### **Research Fields**

- Nonlinear Partial Differential Equations
- Lie Group Theory, Exact Solutions & Symmetries for Nonlinear Systems
- Einstein Field Equations & Equations from Mathematical Physics
- Conservation Laws for Nonlinear Systems
- Fractional Order Partial Differential Equations

## Referees

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**Dr. Karanjeet Singh** (Supervisor, Ph.D.)  
Professor, Department of Mathematics Jaypee  
University of Information Technology,  
Waknaghat, P. O. Dumehar Bani, Kandaghat,  
Solan, (H. P.), INDIA

Ph. No.: (+91) - 9816054966, (+91) - 01792-239259

Fax : (+91) - 01792-245362

Email ID: [karan\\_jeet@yahoo.com](mailto:karan_jeet@yahoo.com), [karanjeet.singh@juit.ac.in](mailto:karanjeet.singh@juit.ac.in)

■

**Dr. V. D. Sharma**

Professor, Department of Mathematics  
Indian Institute of Technology, Bombay  
Powai, Mumbai – 400076, INDIA

Ph. No.: (+91) (022) 25767482 (Office), 25768482

(Res.) Mob. No. +91-9820605360

Email ID: [vsharma@math.iitb.ac.in](mailto:vsharma@math.iitb.ac.in)

■

**Dr. Anjan Biswas**

Associate Professor, Department of Mathematical  
Sciences Delaware State University  
1200 N. DuPont Highway Dover, DE 19901-2277 USA

Ph. No. (302)857-7913(Work) (302)659-0169(Home) (302)857-7054(Fax)

Mob. No. (615)424-0455(cell)

Email ID: [biswas.anjan@gmail.com](mailto:biswas.anjan@gmail.com)

■

**Dr. M. Lakshmanan**

Professor of Eminence & DST Ramanna Fellow  
Centre for Nonlinear Dynamics, School of  
Physics Bharathidasan University,  
Tiruchirappalli - 620 024, Tamilnadu, INDIA

Phone: 0431 – 2407057

Fax : 0431 – 2407093

Email ID: [lakshman@cnld.bdu.ac.in](mailto:lakshman@cnld.bdu.ac.in), [lakshman.cnld@gmail.com](mailto:lakshman.cnld@gmail.com)



**Dr. S. S. Bhatia**

Professor, School of  
Mathematics Dean of Academic  
Affairs Thapar University  
P.O. Box 32, Patiala-147004 , Punjab,  
INDIA Ph. No.: +919646042866  
Email ID: [ssbhatia@thapar.edu](mailto:ssbhatia@thapar.edu), [doaa@thapar.edu](mailto:doaa@thapar.edu)



**Dr. Kuldip Bansal**

Professor, Department of Mathematics  
Dean, Faculty of Science & Technology Interface  
Guru Jambheshwar University of Science and Technology  
Hisar, Haryana, INDIA  
Ph. No.: (+91) (01662) 263167  
Mob. No. (+91) 9416498918  
Email ID: [profkbgju@gmail.com](mailto:profkbgju@gmail.com)

**Personal Profile**

Father's Name: Sh. Murari Lal  
Mother's Name: Smt. Santosh Devi  
Date of Birth: 12. 02. 1979  
Sex: Male  
Marital Status: Married (One daughter, One son)

Permanent Address : Shiv Saree Center, V.P.O. - Ateli Mandi  
District-Mohindergarh, Haryana-123021  
Ph. No. – +91-9463940704, +91-9216940704  
EMAIL: [rajeshateli@gmail.com](mailto:rajeshateli@gmail.com)  
[rajeshgupta@cuh.ac.in](mailto:rajeshgupta@cuh.ac.in)

**Dr. RAJESH KUMAR GUPTA**

**Date:**

**Place:**