

CAREER SUMMARY

- **Specialization:** Bio Mathematics, Computer Applications, Differential Equations and Computational Fluid Dynamics
- **Academics:** **PhD** in Mathematics from **University of Western Ontario, CANADA** with throughout 1st class in academic career; **Gold medalist** in M.Sc. from **Univ of Roorkee (UOR), INDIA.**
- **Honors/Awards/
Fellowships:** AICTE Award for Young Teachers
Special University Scholarship, UWO, Canada
University Gold Medal, UOR;
Best Girl Student Award, UOR,
Best Student Award, UOR;
Highest Marks Medal, UOR,
DST Fellowship (WOS-A scheme); [Could not initiate because at
DST (Young Scientist Award) the time working in World
Bank Project]
- **Experience:** Assistant Professor/ Lecturer at IIT Roorkee and UOR;
Project Head, World Bank project on education, ITDA, Govt. of
Uttaranchal
Assistant Professor at IMS Dehradun;
RA at UOR, Roorkee;
GTA at UWO, Canada.
- **Supervision:** Co-supervisor: Two PhD, IIT Roorkee: Awarded.
Three PhD, IIT Roorkee: in progress.
One M.Phil, UOR: Awarded.
Four MCA, IIT Roorkee: Awarded.
- **Publications:** Journals: 25 published + 2 accepted
Conferences: 17
- **Courses Taught:** Various Mathematics and Computer courses at IIT Roorkee,
UWO Canada, and IMS Dehradun.
- **Membership:** Life Member, Computer Society of India
Member, American Mathematical Society, USA (1991-96).
- **Extra curriculum:** Co-organising Secretary, International Conf. AMOC-2011,
Deputy Coordinator, MA102, IIT Roorkee,
Council Member, IIT Roorkee Alumni (Dehradun Chapter)
Secretary, Mathematical Colloquium, UOR, Roorkee

DETAILS

Academic Qualifications

Degree/ Exam	Division/ Marks%	Univ./ Board	Subjects	Awards/Recognition
Ph.D.		UWO, CANADA	Applied Maths	<i>Special Univ. Scholarship</i>
M.Phil.	Ist (Hons) 79.0	UOR, INDIA	Applied Maths	<i>Highest Marks</i>
M.Sc.	Ist (Hons) 83.4 Gold Medal	UOR, INDIA	Applied Maths	Four Medals at UOR

Honours/ Awards/ Fellowships

1. **AICTE Career Award for Young Teachers** given by Govt of India for the years 2000-2003.
2. **Special University Scholarship** at the University of Western Ontario, London, CANADA, 1991-1995.
3. **University Gold Medal** for standing first class first in M.Sc., 1985.
4. **Gold Medal** as the best student award in M.Sc., 1985.
5. **Silver Medal** as the best girl student award in M.Sc., 1985.
6. **Silver Medal** for getting highest marks in M.Sc. 1st yr., 1984.
7. **Government of India National Scholarship**, 1979-1983.
8. Fellowship under **Women Scientists Scheme***, DST, and Young Scientist Award* (DST)
[*Did not initiate because at that time, working in World Bank Project, ITDA, Govt of Uttarakhand]

Professional/ Research Experience

Employer	Post held
IIT Roorkee	Asstt Professor
IIT Roorkee	Lecturer
ITDA, Govt of Uttarakhand	Project Head
IMS, Dehradun	Asstt. Professor
UOR, Roorkee	Lecturer
UOR, Roorkee	RA (CSIR)
UWO, CANADA	GTA

PUBLICATION RECORD

1. Gupta, Y.K, Pratibha and Kumar, J., **2011**. A new class of charged analogues of Vaidya-Tikekar type super-dense star, *Astrophysics and Space Science*, **333(1)**, 143 – 148.
(Impact factor **1.404**)
2. Maurya, S. K., Gupta Y, K. and Pratibha, **2011**. A class of Charged relativistic super-dense star models, *International Journal of Theoretical Physics*, DOI 10.1007/s10773-011-0968-7
(Impact factor **0.67**)
3. Rawat, K., Katiyar, V.K. and Pratibha, **2011**. Two-Lane Traffic Flow Simulation Model via Cellular Automaton, *International Journal of Vehicular Technology*, Volume 2012, doi:10.1155/2012/130398.
4. Rawat, K., Katiyar, V.K. and Pratibha, **2011**. Effect of Speed Fluctuations due to Driving Imperfections over Road Traffic Noise Emission, *Noise Control Engineering Journal*, **59(5)**, 505 – 513.
(Impact factor **0.304**)
5. Gupta, Y. K., Kumar, S. and Pratibha, **2011**. Charged Analogues of Henning Knutsen's Interior Solutions in General Relativity, *International Journal of Theoretical Physics*, DOI 10.1007/s10773-011-0837-4.
(Impact factor **0.688**)
6. Rawat, K., Katiyar, V.K. and Pratibha, **2011**. A Modified Cellular Automaton Model in Lagrange Form with Velocity Dependent Acceleration Rate, *International Journal of Optimization and Control: Theories & Applications*, 1(1), pp.75-86.
7. Gupta, Y. K., Kumar, S. and Pratibha, **2011**. A New Class of Relativistic Perfect Fluid Cylinders with expansion proportional to Shear Scalar, *Astrophysics and Space Science*, **332(1)**, 449 – 456.
(Impact factor **1.404**)
8. Maurya, S. K., Gupta Y, K. and Pratibha, **2011**. Regular and Well Behaved Relativistic Charged Superdense Star Models, *International Journal of Modern Physics- D*, **20(7)**, 1289 – 1300.
(Impact factor **0.982**)
9. Saini, A., Katiyar. V. K., **Pratibha** and Devdatta, **2010**. Numerical Simulation of the Transport of Inert Gases in Lung Tissue, *International Journal of Applied Mathematics and Mechanics*, **6(15)**, 46-57.
10. Pratibha, **2010**. Highly accurate series solutions of an ODE with singularity occurring in fluid flow problems using symbolic computation, *International Journal of Stability and Fluid Mechanics*.
11. Kumar, S., Gupta, Y. K. and Pratibha, **2010**. Some Fluid Spheres of Embedding Class One with Non-Vanishing Weyl -Tensor in 5-Flat Form, *International Journal of Stability and Fluid Mechanics*, **1(2)**, 163 – 176.
12. Kumar, S., Pratibha and Gupta, Y. K., **2010**. Invariant Solutions of Einstein Field Equation for Non-conformally Flat Fluid spheres of Embedding Class one, *International Journal of Modern Physics – A*, **25(20)**, 3993 – 4000.
(Impact factor **0.982**)
13. Pratibha and Jeffrey, D.J., **2010**. Low Reynolds number mobility functions for two unequal spheres, *International Journal of Applied Mathematics and Mechanics*, **6(12)**, pp 94 – 103.

14. Gupta, Y. K., Pratibha and Kumar, S., **2010**. Some Nonconformal accelerating perfect fluid plates of Embedding class one using Similarity Transformations, *International Journal of Modern Physics – A*, **25(9)**, p1863 – 1879.
(Impact factor 0.982)
15. Gupta, Y. K., Pratibha and Jasim, M. K., **2010**,. Using Symbolic Computation to Obtain Similarity Solutions for Relativistic Accelerating Fluid Plates of Imbedding Class One, *Advanced Studies in Theoretical Physics*, **4 (10)**, p 449 – 466.
16. Rawat, K., Katiyar, V. K. and Pratibha, **2010**. One Lane Traffic Flow Modeling in Lagrange form using Cellular Automata, *International Journal of Applied Mathematics and Mechanics*, **6(5)**, p 46 – 57.
17. Gupta, Y. K., Gupta, S., and Pratibha, **2010**. Charged Analogues of Whittaker’s Interior Solutions, *International Journal of Theoretical Physics*, **(4)**, p854 – 860.
(Impact factor 0.675)
18. Rawat K., Katiyar, V.K. and Pratibha **2009**. Mathematical Modeling of Environmental Noise Impact, *Indian Journal of Biomechanics, Special issue (NCBM-2009)*, p75-81.
19. DevDutta, Katiyar, V.K. and Pratibha **2009**. Mathematical Modeling of Respiratory System: A Review, *Indian Journal of Biomechanics, Special issue (NCBM-2009)*, p56 – 60.
20. Saini A., Katiyar, V.K. and Pratibha **2009**. Mathematical Modeling of Lung Mechanics:A Review, *Indian Journal of Biomechanics, Special issue (NCBM-2009)*, p13 – 16.
21. Pratibha, 2003. Fast and efficient algorithms for solving ordinary differential equations through computer algebra systems, *The Current Science*, **85(8)**, p 1206 – 1209.
(Impact Factor 0.774)
22. Pratibha and Kamal, 1999. Using Maple V to derive correct analytical formulae for gravity anomaly derivatives over anticlines and synclines with hyperbolic density contrast, *The Journal of Applied Geophysics*, **42**, p 47-53.
(Impact Factor 1.333)
23. Pratibha, Kamal, Singh, B. and Dwivedi, A., 1999. On the use of Symbolic computations in Geosciences, *The Current Science*, **76 (8)**, p1145-1149.
(Impact Factor 0.774)
24. Kamal, Pratibha and Chakravarty, A., 1998. Using Fast Hartley Transform to study the free oscillations of the earth, *The Journal of Seismology*, **2**, p179- 181.
(Impact Factor 1.091)
25. Corless, R.M., Jeffrey, D.J., Monagan, M. and Pratibha, 1997. Two perturbation calculations in fluid mechanics using large expression management, *Journal of Symbolic Computations*, **23**, 427-443.
(Impact Factor 0.745)

Accepted for Publication:

26. Pratibha, **2010**. On Applications of Symbolic Computation Systems in Mathematics Education, *International Journal of Education and Allied Sciences*.
27. Saini,A., Katiyar, V.K., Pratibha, and Devdatta, **Numerical simulation of gas flow through a biofilter in lung tissues**, *Int. J. Nano Science and Engineering*.

Conference Proceedings/Presentations:

1. Pratibha and Gupta, YK, 2011. Determining Equations in Similarity Solutions of nonlinear Partial Differential Equations using CAS, *International Conference on Advances in Mathematics, Optimization and Computing (AMOC-2011), Dec. 5 – 7, IIT Roorkee.*
2. Rawat K., Katiyar, V.K. and Pratibha, 2011. Simulation of Traffic Flow in Presence of Traffic Lights, *International Conference on Advances in Mathematics, Optimization and Computing (AMOC-2011), Dec. 5 – 7, IIT Roorkee.*
3. Saini, A., Katiyar, V.K., and Pratibha, 2011. Numerical study of the dispersion in flow through the lungs with a retentive and absorptive wall, *International Conference on Advances in Mathematics, Optimization and Computing (AMOC-2011), Dec. 5 – 7, IIT Roorkee.*
4. Jeffrey, D.J. and Pratibha, 2011. Solution of non-standard two-point boundary value problems, *Advances in Computer Algebra (ACA 2011), June 27-30, Houston, Texas, USA.*
5. Devdatta, Katiyar, V.K., Pratibha and Saini, A., 2010. Numerical Study of Blood Partial Pressure of the Human Respiratory System, *6th World Congress on Bio Mechanics, August 1 – 6, 2010, Singapore.*
6. Saini, A., Katiyar, V.K., Pratibha and Devdatta, 2010. Numerical Study of One-dimensional Model of Blast Wave Propagation through Lungs, *6th World Congress on Bio Mechanics, August 1 – 6, 2010, Singapore, IFMBE Proceedings 31, pp. 725–728.*
7. Rawat K., Katiyar, V.K. and Pratibha, 2010. Two Lane Cellular Automaton Model for Traffic Flow with Modified Cell Size and Variable Acceleration Rate, *11th International Conference of the International Academy of Physical Sciences, February 20 – 22, Allahabad.*
8. *February 20 – 22, Allahabad.*
9. Saini, A., Devdatta, Katiyar, V. K. and Pratibha, 2010. Numerical Study of Inert Gas Transport to Tissue, *11th International Conference of the International Academy of Physical Sciences, February 20 – 22, Allahabad.*
10. Devdatta, Katiyar, V. K., Pratibha and Saini, A., 2010. Study of Blood Partial Pressure of the Human Respiratory System, *11th International Conference of the International Academy of Physical Sciences, February 20 – 22, Allahabad.*
11. Rawat K., Katiyar, V.K. and Pratibha, 2010. Modelling of Traffic flow using Cellular Automata, *National meet of Research Scholars in Mathematical Sciences – 2009, Dec 19 – 23, IIT Roorkee.*

12. Kumar, S., Gupta, Y. K. and Pratibha, 2009. Some Similarity Solutions for Plane Symmetric Perfect Fluid Distributions in General Relativity, *International Transactions in Mathematical Sciences & Computer, AACCS, Vol.2(2)*, p223 – 240, *National Conference on Recent Trends in the Advancements of Astronomy and Applied Mathematics, Nov 14 – 15, Dehradun*
 13. Pratibha and Jeffrey, D. J., 2005. Stokes-Flow Problem Solved Using Maple, in Sunderam, V.S. et al (Eds), ICCS 2005, Lecture Notes in Computer Science, Springer-Verlag, Berlin Heidelberg, p667-670. **Book Chapter in Book Series LNCS-3516**
 14. Jeffrey, D. J. and Pratibha, 2007. Symbolic Numeric Applications in Fluid Mechanics, International Conference IAWS-CFD, *Indian Institute of Technology Roorkee, Roorkee, April 12-14.*
 15. Jeffrey, D.J., Pratibha and Roach, K.B., 2005. Affine Transformations of Algebraic Numbers, Proceedings of ISSAC'05, ACM Pub. pp.193-199.
 16. Pratibha and Jeffrey, D.J., 1996. Use of symbolic computations in particle interactions, in *Proc. International Conf. On Mathematics and its applications in Engg. And Industry, Narosa Pub., 178-186.*
 17. Pratibha and Jeffrey, D.J., 1993. Asymptotic calculations of interaction between close particles, *Number Crunch, University of Western Ontario, Canada.*
- Pratibha and Jeffrey, D.J., 1994. Particle interactions in Electroviscous fluids, *Graduate Conference, University of Western Ontario, Canada.*

Courses taught at IIT Roorkee

MA – 101	Mathematics – I
Elective –	Statistics
IC – 101	C++ Programming
B.Tech. Ist yr.	Mathematics
MA – 201A	AutoCAD (B.Arch.)
IC – 201	Numerical Methods
MA – 566	Computer lab (M.Sc.)
CA – 516	Data Structures Prac. (M.Sc.)
MA – 501B	Numerical Methods (M.Tech.)
CA – 512	C++ Practical (M.Sc.)
MA – 102	Mathematics – II
EC – 101A	C++ Programming
MA – 501A	Advanced Mathematics (M.Tech.)
MA – 500	Foundation in Mathematics (M.Tech.)
CA – 511	Computer Lab (M.Sc.)
CA – 502	System Analysis and Design
MA – 501A	Advanced Mathematics (M.Tech.)

Ph.D. Theses (Cosupervised)

1. Sachin Kumar, Ph.D. (Mathematics), IITR. **2011. (Awarded)**
Title: On exact solution of relativistic fluid distributions using transformation methods.
2. Kamini Rawat, Ph. D. (Mathematics), IITR, **2012. (Awarded)**
Title: Numerical Simulation of Traffic Flow Problems
3. Jitender Kumar, Ph. D. (Mathematics), IITR (in progress)
Field: On some spherically symmetric charged and uncharged perfect fluid solutions of Einstein field equations
4. Anju Saini, Ph. D. (Mathematics), IITR (in progress)
Title: Mathematical Modelling of Lung Mechanics
5. Dev Dutta, Ph. D. (Mathematics), IITR (in progress)
Title: Mathematical Modelling of Respiratory Mechanics

M.C.A./ M. Phil. Theses

1. Dwivedi, A., M.Phil (Computer applications), UOR. **1998.**
Title: Some Application problems through Symbolic Computations.
2. Manish Kumar Gaurav, MCA, IITR, **2011.** Cosupervisor: Mr. R. Kaushik, Symantec, Pune.
Title: Implementation of FARM for Automated Deployment and Testing of Different Products
3. Ashish Sadhwani, MCA, IITR, **2012.** Cosupervisor: Mr. Anuj Gupta, ITEX, BHEL, Hardwar.
Title: Analysis and Reporting of sales and dispatch at BHEL, Haridwar using Pentaho business intelligence suite.
4. Gaurav Shukla, MCA, IITR, **2012.** Cosupervisor: Mr. Achalesh Agrawal, IT Officer, BHEL, Hardwar.
Title: Development of software for colony management in BHEL
5. Sachin Kumar, MCA IITR, **2012.** Cosupervisors: Mr. Amit Agarwal, Mrs. Preeti Agarwal, Symantec, Pune
Title: Email Security using vShield.