

CURRICULUM VITAE

NAME : Prof. Vishnu Dutt Sharma
ADDRESS : Emeritus Fellow
Department of Mathematics,
Indian Institute of Technology, Bombay,
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PERSONAL

Date of Birth : October 19, 1949
Nationality : Indian
Home Address: C-CSRE-149, IIT Campus, Powai, Mumbai 400 076
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EDUCATION

B.Sc. (1966): University of Allahabad, India
M.Sc. (1968): University of Allahabad, India
Ph.D. (1972): Banaras Hindu University, India

RESEARCH AREAS:

Quasilinear Systems of Partial Differential Equations; Conservation Laws, Nonlinear Gasdynamic and Shallow Water Waves; Lie Group Invariance for Solutions of PDEs, and Two-phase Flows.

AWARDS

- Received the **President of India Award** for the Best Research Paper presented at the 20th Congress of the **Indian Society of Theoretical and Applied Mechanics (ISTAM)**, held at the Institute of Technology, BHU (now IIT, BHU), Varanasi – **1975**.
- Received “**IIT Bombay - Excellence in Teaching Award**” for the year **1998**.
- Recipient of “**C. L. Chandna Mathematics Award**”, Canadian World Education Foundation, **Canada**, for Distinguished and Outstanding Contributions to Mathematics Research and Teaching, **1999**.
- Recipient of “**M. N. Saha Award** for Research in Theoretical Sciences, **University Grants Commission**, Govt. of India, **2001**.”
- Recipient of “**Distinguished Services Award**” from the **Vijnana Parishad of India** and the **Indian Society of Information Theory and Applications**, at their joint Conference held at NSIT, New Delhi, for outstanding contributions to Promote Applications of Mathematics in India, **2002**.

- Received the “**IIT Bombay – Excellence in Teaching Award**” for the year **2003**.
- Received “**Prof. S.C. Bhattacharya Research Excellence Award in Pure Sciences**”, instituted by the Indian Institute of Technology Bombay, **2005**.
- **Institute Chair Professor (Dec. 2009- Dec.2012)** in the Department of Mathematics, IIT Bombay for a period of three years.
- Delivered the Fellowship Award Lecture at the **International Academy of Physical Sciences**, Allahabad held at NIT Surat during Dec. **2011**.
- **Institute Chair Professor (Feb., 2015)** in the Department of Mathematics, IIT Bombay for a period of three years.
- Received the “**IIT Bombay – Excellence in Teaching Award**” for the year **2015**.
- Delivered **Twentyninth P. L. Bhatnagar Award Lecture at the 81st Annual Conference of the Indian Mathematical Society (IMS)** held at Visvesvaraya National Institute of Technology (VNIT), Nagpur (Dec. 27, **2015**).
- **RESEARCH DISSEMINATION AWARD** [instituted by the Industrial Research and Consultancy Centre (IRCC) of IIT Bombay] for the year **2015** was conferred on the monograph: **Quasilinear Hyperbolic Systems, Compressible Flows, and Waves, CRC Press, FI (USA), 2010**, authored by Prof. V.D. Sharma, Department of Mathematics, IIT Bombay. (**Nov 2016**)

HONOURS/ DISTINCTIONS

- **Reviewer** for **Mathematical Reviews (USA)** and **Zentralblatt MATH (Germany)**.
- **Fellow** of the National Academy of Sciences, India -**NASI (FNASc.)**, **1998**.
- **Fellow** of the Indian National Science Academy - **INSA (F.N.A.)**, **2002**.
- **Fellow** of the **International Academy of Physical Sciences**, (Allahabad Univ), in recognition of his extra-ordinary contributions to Mathematics. (Dec. 2011).
- **President of the Indian Society of Theoretical and Applied Mechanics (ISTAM)** for the year **2010**.
- Member of the **National Committee** on scientific matters related with **International Council of Scientific Union (ICSU)**, **International Union of Theoretical and Applied Mechanics (IUTAM)** and **International Mathematics Union (IMU)**.

- Member of the **Editorial Board** of the **Indian Journal of Pure and Applied Mathematics** (January, 2005- Dec 2011, and 2013 onward).
- Member of the **Sectional Committee – I** (Mathematical Sciences: Applied Mathematics, Pure Mathematics and Statistics) for **INSA** (Indian National Science Academy), New Delhi for a term of 3 years beginning January, **2005-2007** to assess nominations received for INSA Fellow and INSA Young Scientists.
- Delivered the **Platinum Jubilee Commemoration Lecture at the 94th Indian Science Congress** held at **Annamalai University** (Jan., **2007**).
- Member of the **Shanti Swaroop Bhatnagar Award Committee in Mathematical Sciences** to assess nominations for **2007**.
- Member of the **UGC Committee** to review proposals from the Mathematics departments of various State and Central Universities for financial assistance under SAP, **2008**.
- Served as a member of the i) **Technical Advisory Committee** of the **Indian Statistical Institute, Kolkata**, ii) **School Board of the School of Mathematics and Computer Science/ Information Sciences, University of Hyderabad**, and iii) the **Board of Studies for the Dept. of Mathematics at NEHU (Shillong), Himachal Pradesh University (Shimla), BHU (Varanasi), Indian School of Mines (Dhanbad), Osmania University, Hyderabad, MCE (Hassan), Pondicherry University, and Gorakhpur University**.
- Delivered **Professor P.D. Verma Memorial Lecture** at the Department of Mathematics, **University of Rajasthan, Jaipur** (August 8, **2009**).
- Member of the Expert Committee on Mathematical Sciences for **National Eligibility Test (NET)** conducted by the **CSIR**.
- Member of the **Shyama Prasad Mukherjee Fellowship Award Committee** instituted by the **CSIR**.
- Professor (on deputation) at **IIT Gandhinagar**, for the Autumn Semester (2010).
- **Presided over the Inaugural Session** and delivered a Technical Lecture at the Indian Society of Theoretical and Applied Mechanics (**ISTAM**) Congress held at **NIT, Hamirpur (HP)** (Dec 18-21, 2010).
- **Council Member** of the **Indian Statistical Institute (ISI), Kolkata** for 2010-12.
- Member of the **S.S. Bhatnagar Award Committee in Mathematical Sciences** for 2010.
- **Presided over the Inaugural Session** and delivered a plenary lecture on Hyperbolic PDEs at a National Conference on Mathematical Modeling and Computer Simulation organized by the Department of Applied Mathematics, **Institute of Technology, Banaras Hindu University, (now IIT BHU)** during March 25-27, 2011.

- Delivered an invited **plenary lecture** in the **6th International Conference on Dynamical Systems and Applications** held under the auspices of International Federation for Nonlinear Analysts and Clark Atlanta University – **Center for Theoretical Studies of Physical Sciences at Morehouse College – Division of Science and Mathematics, Atlanta, Georgia, USA** (May 25-28, 2011).
- Delivered invited lectures in the 39th Summer School on ‘Advanced Problems in Mechanics’ organized by the **Institute for Problems in Mechanical Engineering at Saint-Petersburg, Russia** during July 1-5, 2011.
- Invited to deliver **Sir G.I. Taylor Memorial Lecture** in the 56th Congress of the Indian Society of Theoretical and Applied Mechanics (**ISTAM**) held at **NIT Surat** during Dec 19-21, 2011.
- Member of the **Sectional Committee for Mathematical Sciences** for the National Academy of Sciences, India (**NASI**) to assess the nominations for NASI Fellows for the year 2012.
- **Sectional President for 82nd Annual Session of NASI** held at **BHU, Varanasi** (Dec. 2012).
- Member of the **S.S. Bhatnagar Award Committee in Mathematical Sciences** for 2013.
- Invited to deliver **Prof. Mahadev Dutta Memorial Lecture** at the Department of Mathematics, **University of Calcutta, Kolkata** (Dec 10, 2014).
- Member of the **Sectional Committee – I** (Mathematical Sciences: Applied Mathematics, Pure Mathematics and Statistics) for **INSA** (Indian National Science Academy), **New Delhi** for 2015-16 to assess nominations received for **INSA Fellow and INSA Young Scientists**.
- Chair of the **National Committee** of the International Union of Theoretical and Applied Mechanics (**IUTAM**) for 2013-15.
- Member of the **National Committee** of the International Union of Theoretical and Applied Mechanics (**IUTAM**) for 2016.
- Member of the **UGC-SAP (DRS-II) Advisory Committee** for the UGC funded project to the Mathematics & Stats department of Himachal Pradesh University, Shimla, 2016.
- Member of the Scientific Program Committee (**SPC**) for International Conference of the Indian Mathematical Consortium (**TIMC**) in cooperation with American Mathematical Society (**AMS**) during 2016.
- Member of the subject-expert-committee for **CSIR-NET** (2015-16).
- Member of the evaluation committee for **NBHM-PDF**, 2015-16.
- Member of the **Editorial Board of the Proceedings of the National Academy of Sciences, India, Sec. A (Physical Sciences)**-2017 onward.

- **Chaired the Shyama Prasad Mukherjee Fellowship (SPMF) and CSIR-SRF/RA award committees, 2017.**
- Member of the Selection committee on **India-Japanese joint project on Establishment of Young Researchers Fellowship 2017-18.**
- Invited to participate in the **NASI Editorial Board meeting** in Delhi, 2018
- Expert member **for evaluating the work of Inspire Faculty Awardees in a joint Conclave meeting of DST/DBT Fellows, organized by the Ministry of Science and Technology at Jaipur (June-2018).**
- Chaired the CSIR SRF/RA selection committee for Mathematical Sciences, organized by HRDG, New Delhi (2018).
- Member of the **S.S. Bhatnagar Award Committee in Mathematical Sciences** for 2018.
- Member of **DST-FIST committee** appointed by the Department of Science and Technology, Ministry of Science and Technology (Sept-2018).
- Member of the selection committee for the **Prime Minister Research Fellowship (PMRF)** at IIT Kharagpur, 2018

PROFESSIONAL EXPERIENCE

- Sept.1972 - Nov. 1983: **Lecturer** in Applied Mathematics
Institute of Technology (now IIT, BHU), Banaras Hindu University, Varanasi, India.
- Nov.1983 - March 1988: **Reader** in Applied Mathematics,
Institute of Technology, (now IIT BHU).
- March 1988 – till date: **Professor** of Mathematics,
Indian Institute of Technology, Bombay.
- Nov. 1996 – Feb. 2000: **Head**, Department of Mathematics,
Indian Institute of Technology, Bombay.
- March 2001 – Dec.2002: **Convener** of Postgraduate
Academic Performance Evaluation Committee (**PGAPEC**),
Indian Institute of Technology, Bombay.
- Jan. 2003 – Dec 2006: **Head**, Department of Mathematics,
Indian Institute of Technology, Bombay.

- Dec. 2009 – Dec. 2012: **Institute Chair Professor**, Department of Mathematics
Indian Institute of Technology, Bombay.
- Year-2010: **Convener**- Senate Nominations Committee, IIT Bombay.
- Feb. 2015 – Oct 2017: **Institute Chair Professor**, Department of Mathematics, IIT Bombay
- *Year-2010: **Visiting Professor** (on Deputation from IITB) in Autumn Semesters at IIT Gandhinagar
- *Year-2017: **Visiting Professor** (on Deputation from IITB) in Autumn Semesters at IIT Goa.
- * Nov.2017- till date: **Emeritus Fellow**, Department of Mathematics, IIT Bombay,

Research Guidance

Supervised 25 M.Sc. Dissertations and 15 Ph.D. theses on topics relating to Hyperbolic Systems of Partial Differential Equations and Nonlinear waves.

Visits Abroad:

- Visited the Department of Aerospace Engineering, **Univ. of Maryland**, College Park, USA (July 1980 - July 1981) as a Visiting Associate Professor.
- Visiting Member to the Applied Mathematics Group, **Naval Surface Weapons Centre**, Maryland, USA (Feb., 1981).
- Visited Mathematics Research Center, **Univ. of Wisconsin**, Madison, USA (Feb.1981 - March 1981) as a Research Consultant.
- Visited the Institute of Physical Sciences and Technology, **University of Maryland**, USA (April, 1981).
- Visited Department of Mathematics, **George Washington University**, USA (April, 1981).
- Visited the Applied Mathematics Institute, **Univ. of Delaware**, USA, June 1981 July1981.
- Visited the Department of Aerospace Engineering and Department of Mathematics, **University of Southern California**, USA (June 2004).
- Visited the Institute of Pure and Applied Mathematics, **University of California at Los Angeles** (June 2004).
- Participated in the **World Congress of Nonlinear Analysts** (WCNA-2004), held at Orlando, Florida, USA (July-2004).
- Visited the Department of Mechanical and Aerospace Engineering, **University of California at Los Angeles**, USA (May 2005).
- Visited the Department of Mathematics, - **University of Texas Pan American**, Edinburg, USA (May, 2005).
- Participated in the International Congress of Industrial and Applied Mathematics (ICIAM- 2007), **ETH Zurich**, Switzerland (July-2007).

- Participated in the American Mathematical Society meetings on Nonlinear Waves held at **DePaul University, Chicago**, and **University of Albuquerque**, New Mexico, USA (Oct-Nov., 2007).
- Visited the Department of Mathematics, **University of Stanford**, USA (Nov. 2007- March. 2008).
- Visited the Department of Mathematics, **University of Texas-Pan American**, Edinburg, USA; and participated in the Conference on Nonlinear Water Waves with Applications to Wave-Current Interactions and Tsunamis (May, 2010).
- Visited the Department of Astrophysical Sciences, **Princeton University**, New Jersey, USA (May, 2010).
- Visited **Morehouse College – Division of Science and Mathematics, Atlanta**, Georgia, USA (May, 2011).
- Visited Petroleum Research Center (Prof. M. Deo) and Prof. K. Chen (Mech. Engg. Dept.), **University of Utah**, Salt Lake City, USA during May & June, 2011.
- Visited **Institute for Problems in Mechanical Engineering** and participated in the summer school meetings held at St. Petersburg, **Russia** July1-5, 2011.
- Visited **IWAR Tech. Univ. Darmstadt, Germany**, to participate in an Indo-German Conference (Sept 2012).
- Visited **Courant Institute of Mathematical Sciences (CIMS)**, New York Univ., USA (May-June, 2013).
- **ICM-2014**, Seoul, Korea (Aug. 2014).

Lectures (in Seminars/Symposia/Conferences) Delivered:

- *Invited Lecture*, Applied Mathematics Section, Institute of Technology, **Banaras Hindu University**, (Nov. 2, 1985).
- (*Series of Invited Lectures*) Indian Society for Technical Education - Winter School on Mathematical Models of Flow Phenomena in Porous Media held at the **Inst. of Tech., B.H.U.** (Dec. 8-22, 1986).
- *Invited Lecture*, Department of Mathematics, **Gorakhpur University**, (Nov. 20, 1987).
- *Invited Lecture*, Department of Mathematics, **I.I.T. Bombay** (Jan. 8, 1988).
- *Invited Lecture*, Indian Science Congress, Mathematics Section, **Madurai University** (Jan.10, 1989).
- (*Series of Invited Lectures*) Department of Mathematics and Statistics, **Bundelkhand University**, (July, 1989).
- (*Series of invited Lectures*), Academic Staff College, **Banaras Hindu University**, Refresher Course in Mathematics on Analysis and Mathematical Methods for University and College Lecturers (Sept. 11 - 13, 1991).
- *Invited Lecture*, Indian Mathematical Society - Symposium on "Recent advances in Nonlinear Analysis", held at the **Institute of Technology, B.H.U.**, Varanasi (March 23, 1993).
- (*Series of Invited Lectures*) Department of Mathematics and statistics, **R. D. University, Jabalpur** (Nov. 1994).
- (*Series of invited Lectures*) *Guest Lectures*, Winter School in the Chemical Applications of Statistical Mechanics, Department of Chemistry and the RSIC, **I.I.T. Bombay** (Dec.10, 1994).
- *Guest Lecture*, Workshop in Mathematics, Department of Mathematics, **IIT Bombay** (Nov. 1995).
- *Invited Lecture*, Department of Mathematics, **Central University of Hyderabad**, (Sept.1996).

- *Invited Lecture*, Academic Staff College, Department of Mathematics, **Bombay University** (Oct.-Nov. 1996).
- *Invited Lecture*, Department of Mathematics, **I.I.Sc. Bangalore** July 31, 1997).
- *Invited Lecture*, Seventh Annual Conference of Vijnana Parishad of India, **Harcourt Butler Technological Institute, Kanpur** (Oct.25, 1997).
- *Invited Lecture*, Department of Mathematics, **IIT Bombay** (April 7, 1998).
- *Invited Lecture*, International Conference on Scientific Computing and modeling, **S.N. Bose Centre for Basic Sciences, Calcutta** (July 10, 1998).
- *Invited Lecture*, International Conference of the Academy of Physical Sciences held at the **University of Allahabad** (December 1999).
- *Invited Lecture*, Joint 9th National Conference of Vijnana Parishad of India on Applied and Industrial Mathematics and 5th Annual Conference of Indian Society of Information Theory and Applications held at **NSIT, New Delhi** (February 2002).
- *Invited Lecture*, National Seminar on Recent Advances in Fluid Mechanics held at **Gulbarga University, Karnataka** (September 12, 2002).
- *Popular Lecture*, Mathematics Association of I.I.T. Bombay and Bombay Mathematical Colloquium (under the Popular Lecture Series in Mathematics) held at the Department of Mathematics, **IIT Bombay** (October 25, 2002).
- *Invited Lecture*, National Seminar on Current Trends in Mathematics held at the **University of Allahabad** (Nov.10, 2002).
- *Invited Lecture*, Department of Mathematics, **Banaras Hindu University** (June 13, 2003)
- *Invited Lecture*, International Conference on Non-linear wave phenomenon, **IISc Bangalore** (January 5, 2004).
- *Key Note Address*, National Conference on Information Technology, Operations Research and Computing held at **Dr. B.R. Ambedkar University, Agra** (10th April 2004).
- *Invited Lecture*, delivered at the Department of Mathematics, **University of Southern California** (June 25, 2004).
- *Invited Lecture*, Fourth World Congress of Nonlinear Analysts – 2004, organized by the **Florida Institute of Technology**, held at Orlando, Florida (July 3, 2004)
- *Inaugural Address*, Workshop on Optical Communication, organized by the Department of Electronics and Telecommunication Engineering, **VES Institute of Technology, Mumbai** (August 8, 2004).
- *Invited Lecture*, International Conference on Mathematical Fluid Dynamics held at the Department of Mathematics and Statistics, **University of Hyderabad**, Hyderabad (December 3, 2004).
- *Invited Lecture*, delivered at a research conference on New Perspectives for Boundary Value Problems and their asymptotics held at the **University of Texas-Pan American**, USA (May 17, 2005).
- *Invited Lecture*, delivered at an International Conference on "Recent Advances in Heat Transfer", held at **Karunya Institute of Technology** (Deemed University), Coimbatore, during Sept 21-22, 2006.
- *Key note Address*, delivered at ISTE Training Program on Application Orientation in Engineering Mathematics and Mathematical Modelling, held at **National Institute of Technology, Surat** on Dec 26, 2006.

- *Invited Lecture*, delivered to the Applied Mathematics and Physics Unit of **ISI Calcutta** (April, 2006).
- *Invited Lecture*, delivered at Bhaskracharya Pratisthana, **Pune University** (Nov, 2006).
- *Invited Lecture*, delivered at **Indian Science Congress** held at **Annamalai University** (Jan, 2007).
- *Invited Lecture*, delivered at the AMS meeting held at **DePaul University**, Chicago, USA (Oct, 2007).
- *Invited Talk*, delivered at the AMS meeting held at the **Univ of Albuquerque**, New Mexico, USA (Oct, 2007).
- *Invited Lecture*, delivered at the Department of Mathematics, **Stanford University**, USA (Jan, 2008).
- *Invited Lecture*, delivered to the faculty and PG students under the Distinguished Colloquium Series at **North Maharashtra University** (March, 2008).
- *Invited Lecture*, delivered at the National Seminar on Analysis, Differential Equations and Applications, held at **M.S. University, Baroda** (Jan, 2009).
- *Invited Lecture*, delivered at the Seminar meeting of Hyperbolic Systems of PDEs held at **IIT Bombay** from 20-23 Nov., 2009.
- *Invited Lecture*, delivered at the Indian Society of Theoretical and Applied Mechanics (ISTAM-2009) held at **NSIT, New Delhi** from 18-21 Dec. 2009, and chaired a Technical Session on Mechanics of Fluids.
- *Invited Talk*, delivered at a research conference on Nonlinear Water Waves with Applications to Wave-Current Interactions and Tsunamis held at the **University of Texas-Pan American, Texas, USA** during May 17-21, 2010.
- Delivered an invited key note address at an International Conference on Recent Advances in Fluid Mechanics held at **Osmania University, Hyderabad** (Dec 23-24, 2010).
- *Invited Lecture*, delivered at the 76th Annual Conference of the Indian Mathematical Society held at **NIT Surat** from 28-31 Dec. 2010.
- *Invited plenary talk* at an International conference held in **Atlanta, Georgia**, May 25- 28, 2011.
- *Invited to deliver two lectures* on hyperbolic waves and Riemann's problem in gasdynamics in the summer school held in **Petersburg, Russia**, July 1-5, 2011.
- *Invited to deliver a series of lectures* on PDEs to Univ/College Teachers and Research Scholars organized by the Dept of Appl Maths at **National Institute of Technology, Surat** during August 2011.
- Invited to deliver a talk on Quasilinear PDEs in National Conference on "Towards Excellence in Science" held at the **Institute of Science**, Mumbai (Jan/2012).
- Invited to deliver a plenary talk in the National Conference on Mathematical Sciences held at the School of Mathematical Sciences, **North Maharashtra University** during March/2012.
- Invited talk on 'weakly nonlinear waves in compressible flows' delivered at Indo-German Conference on Modeling, Simulation, and Optimization in Applications (held at the **Institute IWAR Tech. Univ. Darmstadt, Germany**, during Sept 5-7, 2012) and Chaired a technical Session of invited speakers.
- Invited talk on 'Wave interaction and the Riemann problem' delivered at the 27th Annual Conference of the Ramanujan Mathematical Society, held in **New Delhi** (Oct. 2012).
- Invited talk on 'interaction of elementary waves' delivered in the International Conference on Computational Analysis of Inverse

Problems and Partial Differential Equations, held at the **University of Central Florida, Orlando (USA)**, on 11th May, 2013.

- Invited talk on 'Euler equations, weak discontinuities and their interaction with elementary waves' delivered at the **Courant Institute of Mathematical Sciences (CIMS, New York University)** on 14th May, 2013.
- Invited talk on 'PDEs modelling wave phenomena' delivered at the School of Mathematics and Computer Applications, **Thapar University, Patiala** on 11th Nov. 2013.
- Invited talk on 'On the development of conservation laws during the last six decades' delivered at the International Conference on the History and Development of Mathematics (ICHDM) held at **JECRC University, Jaipur** (1st Dec., 2013).
- Invited talk on Quasilinear PDEs delivered to the faculty and research scholars at the Dept of Maths, **Osmania University, Hyderabad** (Jan 9, 2014).
- Invited lectures on Numerical methods and stability theory for ODEs at Cluster Innovation Center, **University of Delhi**, (March 7-8, 2014).
- Delivered lectures (on conservation laws with applications continuum mechanics) at the ATM Workshop-2014 (sponsored by the National Centre of Maths - a joint Centre of IIT Bombay and TIFR, Mumbai) held at the Dept of Mathematics, Centre of Advanced Study in Mathematics, **Punjab University, Chandigarh** (Dec 2-7, 2014).
- Delivered lectures in the Teacher Enrichment Workshop on ODE and PDE for College teachers (sponsored by **the National Centre of Maths - a joint Centre of IIT Bombay and TIFR, Mumbai**) held at the Dept of Mathematics, **NORTHCAP University, Gurgaon** (Dec 2015).
- Delivered an invited lecture on Asymptotic Behavior of Nonlinear Waves in International conference (ICMBAA-2015) held at **Aligarh Muslim University, Aligarh** (July, 2015).
- Delivered Key note lecture in a **National Conference on Mechanics** held at the Dept of Maths and Stats, **Himachal Pradesh University, Shimla** (Nov. 2015).
- Delivered a lecture in the Institute award lecture Series at **IRCC, IIT Bombay** (Nov 2016).
- Invited talk on **nonlinear PDEs** delivered to the faculty and research scholars at the Dept of Maths, **Osmania University, Hyderabad** (March, 2017).
- Delivered lectures on 'PDEs and their weak solutions' at the **Science Academies Lecture Workshop** held at Lakshmibai College, Delhi University from Sept-27 to Sept-29, 2017.
- Delivered Keynote address at the **2nd International conference on "Modern Mathematical Methods and High-Performance Computing in Science & Technology (M3HPCST-2018)** at IPEC, Ghaziabad; Jan-2018.
- Delivered 6 lectures in an **Advanced Instructional School workshop on Differential Equations** sponsored by the National Centre for

Mathematics (A joint Centre of TIFR & IIT Bombay) at Hyderabad University (June-2018).

- Invited lecture on **PDEs** delivered at **Symbiosis International**, July (2018).
- Invited lecture on **DEs** delivered at **IIT Roorkee**, Saharanpur, July (2018).
- Delivered lectures in a teacher-enrichment workshop for the faculty teaching at the undergraduate level on **analysis, differential eqs and math. Modeling, funded by the National Centre for Mathematics (A joint Centre of TIFR & IIT Bombay)**, July-2018 at DBC, Delhi Univ.
- Delivered Keynote address in a **conference on "Mathematical Sciences and Development (2018)** at Dr. Bhimrao Ambedkar University Agra (2018).
- Delivered an invited talk on **Conservation Laws** at BITS Hyderabad (2018).
- Delivered Keynote address on Conservation Laws and Weak Solutions at an **International Conference on Mechanics and Algebra** held at the Dept of Maths and Stats, **Himachal Pradesh University**, Shimla (Nov. 2018).
- Delivered 6 lectures in a Teacher-enrichment workshop for the faculty teaching at the undergraduate level on Differential Equations, sponsored by the **National Centre for Mathematics (A joint Centre of TIFR & IIT Bombay)**, Oct-2018 at MNIT, Jaipur.
- Delivered lectures in a teacher-enrichment workshop for the faculty teaching at the undergraduate level on **analysis, differential eqs and math. Modeling, funded by the National Centre for Mathematics (A joint Centre of TIFR & IIT Bombay)**, Oct-2018 at SPMC, Delhi Univ.
- Delivered 2 lectures on **Differential Equations** to the Mathematics faculty and students at **IIT-BHU**, Oct-2018.

Member of the Organizing Committee for the Following:

- Seminar meetings of hyperbolic systems of PDEs held at the Department of Mathematics, IIT Bombay (Nov 20-23, 2009).
- National Symposium in Mathematics (NSM-2010) held at IIT Gandhinagar (Feb 26-28, 2010).
- Advanced Instructional School in Mechanics (Sponsored by NBHM) conducted at the Univ of Hyderabad (Dec/2011).
- Advanced Training School in Mathematics and Workshop on Conservation Laws with Applications to Continuum Mechanics (Sponsored by the National Centre of Mathematics – a joint Centre of IIT Bombay and TIFR, Mumbai) held at the Department of Mathematics, Centre of Advanced Study in Mathematics, Punjab University, Chandigarh (Dec 02 - 07, 2014).

Membership of Professional Societies/Institute

- American Mathematical Society.

- Indian Society of Theoretical and Applied Mechanics.
- Indian Science Congress Association.
- The National Academy of Sciences, India.
- Indian National Science Academy
- Indian Mathematical Society
- Ramanujan Mathematical Society

Book/Monograph Authored

- * V. D. Sharma, **Quasilinear Hyperbolic Systems, Compressible Flows, and Waves**, *Monographs and Surveys in Pure and Applied Mathematics*, **CHAPMAN & HALL/ CRC**, New York, 2010
- * V.D. Sharma, **Some Selected Topics in Fluid Mechanics**: National Status Report, **Indian National Science Academy** (INSA), New Delhi, 2012.

RESEARCH PUBLICATIONS

1. V. D. SHARMA and R.RAM, "The vorticity jump across a stationary magnetohydro-dynamic discontinuity", **ZAMP** (Switz.), 22 (1971) pp. 1126-1134.
2. V.D. SHARMA," Transition through the intersection of several shock surfaces in magnetogasdynamics", **Tensor** (Japan), 23 (1972) pp. 330-332.
3. R. RAM and V.D. SHARMA, "Oblique regular reflection of a shock wave in a plane flow of an ideal dissociating gas in the presence of a transverse magnetic field", **J. Appl. Math. Mech.** (PMM J., Russia), 37 (1973) pp. 547-552.
4. V.D. SHARMA, "A non-elliptic solution of the Lane-Emden equation for index $n = 5$ ", **Phys. Lett.** (U.K./ Netherlands), 60A (1977) pp. 381-382.
5. R.S. SINGH and V.D. SHARMA, "Growth of discontinuities in a non-equilibrium flow of a relaxing gas", **Q. Jl. Mech. Appl. Math.** (UK), 32 (1979) pp. 331-338.
6. R.S. SINGH and V.D. SHARMA, "Propagation of discontinuities along bi-characteristic in magneto-hydrodynamics", **Phys. Fluids** (USA), 23 (1980) pp. 648-651.
7. V.D. SHARMA and R. SHYAM, "The onset of converging and diverging shock waves in a non-equilibrium gas flow", **Acta Astronautica** (Pergamon Press, USA/France), 17 (1980) pp. 269-275.
8. V.D. SHARMA, "A note on the propagation of sonic waves in a radiating gas", **ZAMM** (Germany), 60 (1980) pp. 116-117.
9. V.D. SHARMA, "Non-equilibrium flow of an ideal dissociating gas behind an attached shock wave", **Aeronautical Quart.** (UK), 31 (1980) pp. 238-251.
10. V.D. SHARMA, R. SHYAM and V.V. MENON, "Behavior of finite amplitude waves in a radiating gas ", **ZAMM** (Germany), 61 (1981) pp. 443-448.

11. V.D. SHARMA, "Propagation of discontinuities in magneto-hydrodynamics", **Phys. Fluids** (USA), 24 (1981) pp. 1386-1387.
12. V.D. SHARMA, "Weak discontinuities in a dissociating gas", **Acta Mechanica** (Springer Verlag), 38 (1981) pp. 249-256.
13. V.D. SHARMA, "Correction to a paper on sonic discontinuities in a relaxing gas", **Appl. Sci. Res.** (Netherlands), 36 (1981) pp. 357-359.
14. V.D. SHARMA and V.V. MENON, "Further comments on the behavior of acceleration waves of arbitrary shape", **J. Math. Phys.** (USA), 22 (1981) pp. 683-684.
15. V.V. MENON and V.D. SHARMA, "Characteristic wave fronts in magneto-hydro-dynamics", **J. Math. Anal. Appl.** (USA), 81 (1981) pp. 189-203.
16. V.D. SHARMA, "Propagation of weak MHD waves in steady hypersonic flows with radiation", **AIAA Journal** (U.S.A) 19 (1981) pp. 1609-1610.
17. R.S. SINGH and V.D. SHARMA, "On the propagation of weak discontinuities along bi-characteristics in a radiating gas", **J. Appl. Mech.** (Trans. ASME, USA), 48 (1981) pp. 737-742.
18. R. SHYAM, V.D. SHARMA and V.V. MENON, "Nonlinear breaking of wave fronts in a vibrationally relaxing- gas", **J. Appl. Mech.** (Trans. ASME, USA), 49 (1982) pp. 10-12.
19. R. SHYAM and V.D. SHARMA, "Nonlinear breaking of waves in an electrically conducting and radiating gas", **ZAMP** (Switz.), 33 (1982) pp. 772-782.
20. V.D. SHARMA, "On the breakdown of acceleration waves in a vibrationally relaxing gas", **Acta Mechanica** (Springer Verlag), 44 (1982) pp. 121-126.
21. V.D. SHARMA, "Amplification of discontinuities in a radiating gas", **AIAA Journal** (USA), 20 (1982) pp. 1310-1312.
22. V.V. MENON, V.D. SHARMA and A. JEFFREY, "On the general behavior of acceleration waves", **Applicable Analysis** (USA), 16 (1983) pp. 101-120.
23. V.D. SHARMA, "Growth of discontinuities in relativistic fluids", **Int. J. Theor. Phys.** (USA), 22 (1983) pp. 83-86.
24. S.I. PAI, V.D. SHARMA and S. MENON, "Time evolution of discontinuities at the wave head in a non equilibrium two phase flow of a mixture of gas and dusty particles", **Acta Mechanica** (Springer Verlag), 46 (1983) pp. 1-13.
25. V.V. MENON and V.D. SHARMA, "Evolution of weak discontinuities in the unsteady flow of thermally conducting dissociating gases", **AIAA Journal** (USA), 21 (1983) pp. 1479-1480.
26. V.D. SHARMA and R. SHYAM, "A note concerning the corrigendum to the non-uniform propagation of weak discontinuities in magnetogasdynamics", **Arch. Ratl. Mech. Anal.** (USA), 26 (1984) p. 211.
27. V.D. SHARMA, "Development of jump discontinuities in radiative magneto-gas-dynamics", **Int. J. Engng Sci.** (USA), 24 (1986) pp. 813-818.

28. V.D. SHARMA, R. SHYAM and L.P. SINGH, "Shock formation distance in a two-dimensional steady flow over a concave corner in radiative magnetogasdynamics", **ZAMM** (Germany), 67 (1987) pp. 87-92.
29. V.D. SHARMA, "On the evolution of compression pulses in a steady magneto-hydro- dynamic flow over a concave wall", **Q. Jl. Mech. Appl. Math.** (UK), 40 (1987), pp. 527-537.
30. V.D. SHARMA, L.P. SINGH and R. RAM, "The progressive wave approach analyzing the decay of a saw-tooth profile in magnetogasdynamics", **Phys. Fluids** (USA), 30 (1987) pp. 1572-1574.
31. V.D. SHARMA, R. RAM and P.L. SACHDEV, "Uniformly valid analytical solution to the problem of decaying shock wave", **J. Fluid Mech.** (UK), 185 (1987) pp.153-170.
32. V.D. SHARMA, "Transport of Lipschitz discontinuities along bi-characteristics in RMGD", **ZAMM** (Germany), 68 (1988) pp.56-58.
33. N. GUPTA, R. RAM and V.D. SHARMA, "On the geometrical and physical properties of a plane magneto-gas-dynamic flow", **ZAMP** (Switz.), 39 (1988) pp. 468-477.
34. L.P. SINGH, V.D. SHARMA and R. RAM, "Flow pattern induced by piston impulsively moving in a perfectly conducting inviscid radiating gas", **Phys. Fluids B** (USA), 1 (1989) pp. 692-699.
35. V.D. SHARMA, R.R. SHARMA, B.D. PANDEY and N. GUPTA, "Nonlinear analysis of a traffic flow", **ZAMP** (Switz.), 40 (1989) pp. 828-837.
36. L.P. SINGH, V.D. SHARMA and R. RAM, "Radiating gas flow past a slender body with an attached shock wave", **ZAMM** (Germany), 69 (1989) pp. 299-303.
37. V.D. SHARMA, B.D. PANDEY and R.R. SHARMA, "Weak discontinuities in non-equilibrium flow of a dusty gas", **Acta Mechanica.** (Springer Verlag), 99 (1993), pp. 103-111.
38. R.R. SHARMA, V.D. SHARMA, B.D. PANDEY and P. SHUKLA, "Approximate and exact solutions of a gaseous flow with shocks", **Q. Jl. Mech. Appl. Math.** (UK), 46 (1993) pp. 141-152.
39. V.D. SHARMA, R.R. SHARMA, B.D. PANDEY and N. GUPTA, "Wave-front analysis of weak nonlinear waves in a 2 - phase flow of gas and dust particles", **ZAMP** (Switz.), 44 (1993) pp. 799-811.
40. Ch. RADHA, V.D. SHARMA and A. JEFFREY, "On interaction of shock waves with weak discontinuities", **Applicable Analysis** (USA), 50 (1993) pp. 145-166.
41. Ch. RADHA and V.D. SHARMA, "Imploding cylindrical shock in a perfectly conducting and radiating gas", **Phys. Fluids B** (USA), 5 (1993) pp. 4287-4294.
42. V.D. SHARMA and Ch. RADHA, "On one dimensional planar and nonplanar shock waves in a relaxing gas", **Phys. Fluids** (USA), 6 (1994) pp. 2177-2190.
43. V.D. SHARMA and Ch. RADHA, "Similarity solutions for converging shocks in a relaxing gas", **Int. J. Engng Sci.** (USA), 33 (1995) pp. 535-553.
44. Ch. RADHA and V.D. SHARMA, "Propagation and interaction of waves in a relaxing gas", **Philosophical Transactions of the Royal Society London** (UK), 352A (1995) pp. 169-195.
45. V.D. SHARMA and Ch. RADHA, "Three-dimensional shock wave propagation in an ideal gas", **International Journal of Nonlinear Mechanics** (USA), 30 (1995) pp. 305-322.

46. V.D. SHARMA and Ch. RADHA, "Strong converging shock waves in a radiating gas", **ZAMM** (Germany), 75 (1995) pp. 847-859.
47. J. JENA and V.D. SHARMA, "Lie transformation group solutions of nonlinear equations describing viscoelastic materials, **Int. J. Engng Sci**, (USA), 35 (1997) pp. 1033-1044.
48. J. JENA and V.D. SHARMA, "Self-similar shocks in a dusty gas", **International Journal of Nonlinear Mechanics** (USA), 34 (1999) pp. 313-327.
49. Ch. RADHA, V.D. SHARMA and A. JEFFERY, "An approximate analytical method for describing the kinematics of a bore over a sloping beach", **Applicable Analysis** (USA), 81 (2002), pp. 867-892.
50. G.K. SRINIVASAN and V.D. SHARMA, "Modulation equations of weakly nonlinear geometrical optics in media exhibiting mixed nonlinearity", **Studies in Applied Mathematics** (USA), 110 (2003), pp. 103-122.
51. G.K. SRINIVASAN and V.D. SHARMA, "A note on the jump conditions for systems of conservation laws", **Studies in Applied Mathematics** (MIT, USA), 110 (2003), pp. 391-396.
52. G.K. SRINIVASAN and V.D. SHARMA, "On weakly non-linear waves in media exhibiting mixed non-linearity", **J. Math. Anal. Appl.** (Academic press, USA), 285 (2003), pp.629-641.
53. G. MADHUMITA and V.D. SHARMA, "Propagation of strong converging shock waves in a gas of variable density", **Journal of Engineering Mathematics** (Kluwer Academic, The Netherlands), 46 (2003), pp. 55-68.
54. V.D. SHARMA, G. MADHUMITA, and S.A.V. MANICKAM, "Dissipative waves in a relaxing gas exhibiting mixed nonlinearity", **Nonlinear Dynamics** (Kluwer Academic, The Netherlands), 33 (2003), pp. 283-299.
55. S.A.V. MANICKAM, Ch. RADHA and V.D. SHARMA, "Far field behavior of waves", **Applied Numerical Mathematics** (Elsevier, The Netherlands), 45 (2003), pp. 293-301.
56. G.K. SRINIVASAN and V.D. SHARMA, "Energy dissipated across shocks in weak solutions of conservation laws", **Studies in Applied Mathematics** (MIT, USA), 112 (2004), pp. 281-291.
57. G.K. SRINIVASAN and V.D. SHARMA, "Implosion time for converging cylindrical and spherical shells", **Z. angew. Math. Phys.** (ZAMP); (Birkhauser, Switzerland), 55(2004), pp. 974-982.
58. G. MADHUMITA and V.D. SHARMA, "Imploding cylindrical and spherical shock waves in a non-ideal medium", **Journal of Hyperbolic Differential Equations** (World Scientific; New Jersey, London) 1(2004), pp. 521-530.
59. V.D. SHARMA and G.K.SRINIVASAN, "Wave interactions in a non equilibrium flow", **Int. Journal of Non-linear Mechanics** (USA), 40 (2005), pp. 1031-1040.
60. V.D. SHARMA and G. MADHUMITA, "Nonlinear wave propagation through a stratified atmosphere", **J. Math. Anal. Appl.** (Elsevier, USA), 311 (2005), pp. 13-22.

61. V.D. SHARMA and R. ARORA, "Similarity solutions for strong shocks in an ideal gas", **Studies in Applied Mathematics** (MIT, USA), 114 (2005), pp.375-394.
62. R. ARORA and V.D. SHARMA, "Converging of strong shock waves in a Van der Waals gas" **SIAM J. Appl. Math.** (USA), 66(2006), pp. 1825-1827.
63. G.K. SRINIVASAN, V.D. SHARMA and B.S. DESALE, "An integrable system of ODE reductions of the stratified Boussinesq equations", **Compt. Math. Appl.** (Elsevier), 53 (2007), pp. 296-304.
64. M. PANDEY and V.D. SHARMA, "Interaction of a characteristic shock with a weak discontinuity in a non-ideal gas", **Wave Motion** (Elsevier), 44(2007), pp. 346-354.
65. V.D. SHARMA and R. RADHA, "Exact solutions of Euler Equations of ideal gas-dynamics via Lie group analysis" **ZAMP** (Birkhauser, Switz.), 59(2008), pp. 1029-1038.
66. M. PANDEY, R. RADHA and V.D. SHARMA, "Symmetry analysis and exact solutions of magneto-gas-dynamic equations, **Quart. J. Mech. Appl. Math.** (Oxford Univ Press, UK), 61(2008), pp. 291-310.
67. T.R. SEKHAR and V.D. SHARMA, "On certain exact solutions of 3-dimensional Euler equations using symmetry analysis", **Appl. Math. Comput.** (Elsevier), 196(2008), pp. 147-157.
68. T.R. SEKHAR and V.D. SHARMA, "Interaction of shallow water waves", **Studies in Applied Mathematics** (MIT, USA), 121(2008), pp. 1-25.
69. J. JENA and V.D. SHARMA, "Interaction of a characteristic shock with a weak discontinuity in a relaxing gas", **Journal of Engineering Mathematics** (Springer) Vol.60 (2008), no. 1, 43--53.
70. M. PANDEY and V.D. SHARMA, "Kinematics of a shock of arbitrary strength in a non-ideal gas", **Quarterly of Applied Mathematics** (USA), 67(2009), pp. 401-418.
71. M. PANDEY, B.D. PANDEY and V.D. SHARMA, "Symmetry groups and similarity solutions for the system of equations for a viscous compressible fluid", **Appl. Math. Comput.** (Elsevier), 215(2009), pp. 681-685.
72. T.R. SEKHAR and V.D. SHARMA "Evolution of weak discontinuities in shallow water equations", **Applied Mathematics Letters** (Elsevier), 23(2010), pp. 327-330.
73. T.R. SEKHAR and V.D. SHARMA, "Riemann problem and elementary wave interactions in isentropic magnetogasdynamics", **Nonlinear Analysis - Real World Applications** (Elsevier) 11 (2010), pp. 619-636.
74. T.R. SEKHAR and V.D. SHARMA, "Wave interactions for the pressure gradient equations", **Methods and Applications of Analysis** (USA), 17 (2010), pp. 165-178.
75. Ch. RADHA and V.D. SHARMA, "Interaction of a Weak Discontinuity with Elementary Waves of Riemann problem", **Journal of Mathematical Physics** (USA) **53**, 013506 (2012).

76. T. R. SEKHAR and V.D. SHARMA, "Similarity analysis of modified shallow water equations and evolution of weak waves", *Commun. Nonlinear Sci. Numer. Simul.* (Elsevier) **17** (2012), no. 2, 630–636.
77. T.R. SEKHAR and V.D. SHARMA, Solution to the Riemann problem in a one-dimensional magneto-gas-dynamic flow, *International Journal of Computer Mathematics* (Taylor & Francis), **89** (2012) 200-216.
78. V.D. SHARMA and R. VENKATRAMAN, "Evolution of weak shocks in one dimensional planar and non-planar gas-dynamic flows", *International Journal of Nonlinear Mechanics* (Elsevier) **47** (2012) 918-926.
79. XIAOYU FU and V.D. SHARMA, "Cauchy problem for quasilinear hyperbolic systems of shallow water equations", *Applicable Analysis* (Taylor & Francis) **92** (2013) 2309-2319.
80. M. ZAFAR and V.D. SHARMA, "Characteristic decomposition of compressible Euler equations for a non-ideal gas in two-dimensions", *Journal of Mathematical Physics* (USA) **55**, (2014) 093103 1-12.
81. XIAOYU FU and V.D. SHARMA, "Cauchy problem for an isentropic magnetogasdynamics system", *Journal of Mathematical Analysis and Applications* (Elsevier).**424** (2015)437-443.
82. NEELAM GUPTA and V.D. SHARMA, "On shock reflection-diffraction in a van der Waals gas", *Stud. Appl. Math.* (USA) **135** (2015), No. 2, pp 171-195.
83. M. ZAFAR and V.D. SHARMA, "Expansion of a wedge of non-ideal gas into vacuum", *Nonlinear Anal. Real World Appl.* (Elsevier) **31** (2016), 580–592.
84. Neelam Gupta and V.D. Sharma, "Diffraction of a weak shock by a wedge in a van der Waals gas, *IMA J. Appl. Math.* (UK) **81** (2016), no. 5, 824–841.
85. Triveni. P. Shukla and Sharma, V.D., "Weakly nonlinear waves in non-ideal fluids", *Studies in Applied Math* (MIT, USA), Vol.**138** (2016), 247-268.
86. ANUPAM SEN, T. RAJA SEKHAR, and V. D. SHARMA, "Wave interactions and stability of the Riemann solution for a strictly hyperbolic system of conservation laws", *QUARTERLY OF APPLIED MATHEMATICS* (USA), VOLUME **LXXV**, Nr. 3 (2017), 539–554.
87. Triveni P. Shukla, G. Madhumita, and V.D. Sharma, "Evolution of planar and cylindrically symmetric magneto-acoustic waves in a van der Waals fluid", accepted for publication in *International Journal of Non-Linear Mechanics* (Elsevier), **91** (2017), 58-68.
88. Triveni P. Shukla and V.D. Sharma, "Under-compressive shock waves in Hall MHD, *Mathematical Methods in Applied Sciences* (Wiley) **41**(2018), 4360-4375.

89. Zafar, M. and Sharma, V. D., "Classification of the Riemann problem for compressible two-dimensional Euler system in non-ideal gas, **Nonlinear Analysis Real World Applications** (Elsevier) **43**, (2018) 245-261.

90. Triveni P. Shukla and V.D. Sharma, "Evolution equation for wave amplitude exhibiting quartic nonlinearity", **Math. Methods Appl. Sci.** **41**, (2018) 9422-9440.
