Faculty Achievements (2019-24)

Dr. Poonam Lakhotia-

- **Served as Resource Person/Coordinator/member of Organising Committee for the following event:**

  - **Co-Coordinator** for 2-days SDP "Enhancing learning through ICT tools" organised by Department of Mathematics, Daulat Ram College from 23-24 August 2023.
  - **Co-convenor & Resource Person** in a 5- day workshop on "Vedic Mathematics" organized by Department of Mathematics, Daulat Ram College from 11-18 Oct 2023.
  - **Resource Person** in in-house SDP on "R Language" organised by Department of Mathematics, Daulat Ram College from 21-28 December 2021.
  - **Resource Person** in in-house SDP on " Enhancing Learning through ICT Tools" organised by B.A. Program committee, Daulat Ram College on 24-25 November 2021.
  - **Co-Convenor** for webinar "Mathematical Modeling, Artificial Intelligence and machine learning" organised by Department of Mathematics, Daulat Ram College from 22 September 2021.
  - **Convenor** for webinar " Decoding NEP: Redefining Goals and Pedagogies of Today's Education for the World of Tomorrow" organised by Department of Mathematics, Daulat Ram College on 24 August 2021.
  - **Convenor** for webinar " Technology enabled higher education in India: Challenges and Opportunities" organised by Department of Mathematics, Daulat Ram College on 19 June 2020.

- **Published/Co-published the following papers:**
  (APA format for Journal Article)

1. P. Mantry, K.T. Poumai, S.K. Kaushik, Reconstruction of Multidimensional digital signals, International Journal of Wavelets, Multiresolution and Information Processing, Vol 21, No. 01, pg 1-19, 2023, ISSN-0219 6913.

2. Poonam Mantry, S.K. Gandhi and Raksha Sharma, A note on the computability of Hilbert-Schmidt Operator, Poincare Journal of Analysis and applications, Vol 10, No 2 (2023), 383-390.

3. Poonam Mantry, S. K. Gandhi, Computability of the Translation Operator, Poincare Journal of Analysis and Applications, Vol 11, No1 (2024), 1-13.

Dr. Jyoti Sharma -

- **Served as Resource Person/Coordinator/member of the Organising Committee for the following event:**

    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from September 13-14, 2024.
    - **Convenor & Resource Person** in a 5- day workshop on "Vedic Mathematics" organized by Department of Mathematics, Daulat Ram College from 11-18 Oct 2023
    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from August 23-24, 2023.
    - **Co-cordinator** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from November 26-27, 2022.
    - **Co-convener & Resource Person** in in-house SDP on "R Language" organised by Department of Mathematics, Daulat Ram College from 21-28 December 2021.
    - **Co-convenor & Resource Person** in workshop on "Vedic Mathematics" organized by Department of Mathematics under IQAC, Daulat Ram College from December 17-20, 2021.
    - **Resource person** for 2-days E-SDP "Enhancing learning through ICT tools" organised by Department of Mathematics under IQAC Daulat Ram College from November 24-25, 2021.
    - **Resource person** for E-SDP "Enhancing learning through ICT tools" organised by Daulat Ram College under IQAC for supernumerary students on Jan 06, 2021 & Jan 09 2021.
    - **Resource person** for 3-days E-SDP "Enhancing learning through ICT tools" organised by Department of Mathematics under IQAC Daulat Ram College from August 17-19, 2020.
    - **Member of the Organising committee** for webinar " Technology enabled higher education in India: Challenges and Opportunities" organised by Department of Mathematics, Daulat Ram College on 19 June 2020.
    - **Resource person** for the Workshop for Non-Teaching Staff organised by Daulat Ram College from July 07, 2019-July 12, 2019.

- **Published/Co-published the following papers:**
    1. **Jyoti Sharma** and Shivam Kumar Singh , Clifford Valued Shearlet Transform. *Adv. Appl. Clifford Algebras* **30** (2020)**, Paper no.** 38 , pp 16.
    2. Ajay Kumar and **Jyoti Sharma**, Uncertainty principles on nilpotent Lie groups. Khayyam J. Math. 8 (2022),no. 2, 143-162.
    3. Shivam Kumar Singh and **Jyoti Sharma** Generalized slant Toeplitz operators on the derivative Hardy space S^2(D). Ann. Funct. Anal. 13 (2022), no. 2, 18 pp

Dr. Vikas Dhaka -

- **Served as Resource Person/Coordinator/member of the Organising Committee for the following event:**

  - **Induction course** completed an induction course on "Faculty in Universities/Colleges/Institutes of Higher Education" from Teaching Learning Centre Ramanujan College, University of Delhi from 20 January – 18 Februrary, 2023.
  - **Refresher course** completed a refresher course on "Managing Online Classes & Co- creating MOOCS 25.0" from Teaching Learning Centre Ramanujan College, University of Delhi from 07 – 21 April, 2023.
  - **FDP** completed an FDP on "Statistical software R" from Online Guru Angad Dev Teaching Learning Centre, University of Delhi from 04th November to 11th November 2022
  - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from September 13-14, 2023.
  - **Resource Person** in a 5- day workshop on "Vedic Mathematics" organized by Department of Mathematics, Daulat Ram College from 11-18 Oct 2023

  - **Coordinator** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the BA (P) committee, Daulat Ram College from November 26-27, 2022.
  - **Convener & Resource Person** in in-house SDP on "R Language" organised by Department of Mathematics, Daulat Ram College from 21-28 December 2021.
  - **Convenor** for organizing a webinar " Mathematical modeling, AI and Machine Learning" organised by Department of Mathematics, Daulat Ram College on 22 September 2021.
  - **Convenor** for organizing a webinar " Current Trends in Science and Technology" organised by Department of Mathematics, Daulat Ram College on 03 September 2021.
  - **Resource person** for 2-days E-SDP "Enhancing learning through ICT tools" organised by Department of Mathematics under IQAC Daulat Ram College from November 24-25, 2021.
  - **Resource person** for 3-days E-SDP "Enhancing learning through ICT tools" organised by Department of Mathematics under IQAC Daulat Ram College from August 17-19, 2020.
  - **Member of the Organising committee** for webinar " Technology enabled higher education in India: Challenges and Opportunities" organised by Department of Mathematics, Daulat Ram College on 19 June 2020.
  - **Resource person** for the Workshop for Non-Teaching Staff organised by Daulat Ram College from July 07, 2019-July 12, 2019.
  - **Member of the Organising committee and Resource person** for Inspire Science Camp sponsored by Department of Science and Technology organised by Daulat Ram College on December 17-21, 2018.

- **Published/Co-published the following papers:**

1. Aggarwal, A.G., Dhaka, V. & Nijhawan, N. Reliability analysis for multi-release open-source software systems with change point and exponentiated Weibull fault reduction factor. *Life Cycle Reliab Saf Eng* 6, 3–14 (2017). https://doi.org/10.1007/s41872-017-0001-0
2. Aggarwal, A.G., Dhaka, V., Nijhawan, N., Tandon, A. (2019). Reliability Growth Analysis for Multi-release Open Source Software Systems with Change Point. In: Kapur, P., Klochkov, Y., Verma, A., Singh, G. (eds) System Performance and Management Analytics. Asset Analytics. Springer, Singapore. https://doi.org/10.1007/978-981-10-7323-6_12
3. Nijhawan, N., & Dhaka, V. (2022). Software reliability modeling and assessment integrating time dependent fault reduction factor in random environment. *Optimization models in Software Reliability* (pp. 135–158). Cham: Springer.
4. Nijhawan, N., Aggarwal, A. G., & Dhaka, V. (2018). An SRGM for multi-release open source software system. *International Journal of Innovation and Technology Management*, *15*(02), 1850011.
5. Dhaka, V., Nijhawan, N. Effect of change in environment on reliability growth modeling integrating fault reduction factor and change point: a general approach. *Ann Oper Res* 340, 181–215 (2024). https://doi.org/10.1007/s10479-022-05084-6

Dr. Umesh Kumari-

- **Served as Resource Person/Coordinator/member of the Organising Committee for the following event:**

  - **Resource Person** in in-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College on 26-27 November 2022.
  - **Resource Person** in a 5-day "Vedic Mathematics" workshop organised by the Department of Mathematics, Daulat Ram College from 11-18 Oct 2023.

- **Presented the following papers/posters:**

1. Paper Presented in International Conference on "Recent trends in Applied and Physical Sciences using Machine Learning" ICRT-2023, April 2023, organised by North Cap University, Gurugram, Haryana.
2. Paper presented in 1st International Conference on Emerging Trends in STEM & Health Agri Sciences for Sustainable Development, MIET Kumaon, Lamachaur, Haldwani, Uttrakhand, India, 11-12 March, 2024

- **Published/Co-published the following papers:**

Umesh Kumari and D.C.Sharma, Transient Analysis of an unreliable system with working vacation and threshold recovery in Mathematics in Engineering, Science and Aerospace (MESA), Vol (14)(3)(2023), 761-772

Dr. Shelly Verma-

- **Served as Resource Person/Coordinator/member of the Organising Committee for the following event:**

    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from September 13-14, 2024.
    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from August 23-24, 2023.
    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from November 26-27, 2022.
    - **Resource Person and e-content creator** for the ten days online certificate course on "Productivity Software and Mathematical Tools" organized by the Department of Mathematics, Maitreyi College, University of Delhi from June 14- June 24, 2021**.**

- **Presented the following papers/posters:**

    Participated and presented a paper entitled " Coefficient Inequality of Caratheodory Class and its application to fifth coefficients" in National Conference on Advances in Mathematical Analysis and Its Applications organized by P.G.D.A.V. College, University of Delhi from November 8-10, 2019.

Dr. Astha Chauhan-

- **Served as Resource Person/Coordinator/member of the Organising Committee for the following event:**

    - **Resource Person** in a 5- day workshop on "Vedic Mathematics" organized by Department of Mathematics, Daulat Ram College from 11-18 Oct 2023.
    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from August 23-24, 2023.
    - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from November 26-27, 2022.

- **Presented the following papers/posters:**

    Paper Presented in International Conference on "Recent trends in Applied and Physical Sciences using Machine Learning" ICRT-2023, April 2023, organised by North Cap University, Gurugram, Haryana.

- **Published/Co-published the following papers:**

1. S. Kumar, S.K. Dhiman and **Astha Chauhan**, "Analysis of Lie Invariance, Analytical Solutions. Conservation Laws, and a Variety of Wave Profiles for the (2+1)-Dimensional Riemann Wave Model Arising From Ocean Tsunamis and Seismic Sea Waves", **The European Physical Journal Plus,** 138: 622, 2023, ISSN:2190-5444. (I.F: 3.758) (SCI)

2. S. Kumar, W. X. Ma, S.K. Dhiman and **Astha Chauhan**, "Lie Group Analysis with the Optimal System, Generalized Invariant Solutions, and an Enormous Variety of Different Wave Profiles for the Higher-Dimensional Modified Dispersive Water Wave System of Equations, The European Physical Journal Plus, 138(5), 4342023, 2023, ISSN:2190-5444. (I.F: 3.758) (SCI)

3. **Astha Chauhan** and Rajan Arora, "Application of Homotopy Analysis Method (HAM) to the Nonlinear KdV equations", Communication in Mathematics, 1-12, 31, 2022, ISSN: 1804-1388. (SCOPUS)

4. **Astha Chauhan**, "Shock waves propagation in a non-ideal rotating medium with azimuthal magnetic field effect using Lie group technique", Physics of Fluids, 34, 017101, 2022, ISSN: 10706631. (I.F.: 4.98) (SCI)

5. **Astha Chauhan**, Ashish Tiwari, Kajal Sharma and Rajan Arora, Steepening of Waves in a Non-Ideal Radiative Magnetogasdynamics with Dust Particles, Pramana-A Journal of Physics, 96, 139, 2022, ISSN: 0304-4289. (I.F.: 1.688) (SCI)

6. **Astha Chauhan** and Rajan Arora, "Invariance analysis and some new exact analytic solutions of the time-fractional coupled Drinfeld-Sokolov-Wilson equations", Communication in Mathematics, 30(1), 63–80, 2022, ISSN: 1804-1388. (SCOPUS)

7. Sachin Kumar, Shubham Kumar Dhiman and **Astha Chauhan**, "Symmetry reductions, generalized solutions and dynamics of wave profiles for the (2+1)-dimensional system of Broer-Kaup-Kupershmidt (BKK) equations", Mathematics and Computers in Simulation, 196, 319-335, 2022, ISSN: 0378-4754. (I.F.: 3.601) (SCI)

8. **Astha Chauhan** and Kajal Sharma, "One-Dimensional Spherical Shock Waves in an Interstellar Dusty Gas Clouds", Zeitschrift fur Naturforschung A (ZNA), DOI:10.1515/zna2020-0210, 2021, ISSN: 1865-7109. (I.F.: 1.8) (SCI)

9. **Astha Chauhan** and Rajan Arora, "Solution of the Riemann Problem for an Ideal Polytropic Dusty Gas in Magnetogasdynamics", Zeitschrift fur Naturforschung A (ZNA), Volume 75(6), 511-522, 2020, ISSN: 1865-7109. (I.F.: 1.8) (SCI)

10. **Astha Chauhan**, Kajal Sharma, Rajan Arora and Deepika Singh, "Similarity Solutions for the Strong Shock Waves in Magnetogasdynamics with the Effect of Monochromatic Radiation", The European Physical Journal Plus, (Springer), 135(9), 1-17, 2020, ISSN: 2190-5444. (I.F: 3.758) (SCI)

11. **Astha Chauhan**, Kajal Sharma and Rajan Arora, "Lie Symmetry Analysis, Optimal System and Generalized Group Invariant Solutions of the (2+1)-Dimensional Date-Jimbo-Kashiwara Miwa Equations", Mathematical Methods in the Applied Sciences (John Wiley and Sons), Volume 43, 8823-8840, 2020, ISSN: 0999-1476. (I.F.: 3.007) (SCI)

12. **Astha Chauhan** and Rajan Arora, "Self-similar Solutions of Cylindrical Shock Wave in a Dusty Gas", Indian Journal of Physics (Springer), Volume 93, Pages 665–673, 2020, ISSN: 0973-1458. (I.F.: 2.0) (SCI)

13. Kajal Sharma, Rajan Arora and **Astha Chauhan**, "Invariance Analysis, Exact Solutions and Conservation Laws of (2+1)-Dimensional Dispersive Long Wave Equations", Physica Scripta (IOP Science), Volume 3, 055207, 2020, ISSN: 0031-8949. (I.F.:2.9) (SCI)

14. Kajal Sharma, Rajan Arora, **Astha Chauhan** and Ashish Tiwari, "Propagation of Waves in a Non-Ideal Magnetogasdynamics with Dust Particles", Zeitschrift fur Naturforschung A (ZNA), Volume 75(3), 193-200, 2020, ISSN: 1865-7109. (I.F.: 1.8) (SCI)

15. **Astha Chauhan** and Rajan Arora, "Time Fractional Kupershmidt Equation: Symmetry Analysis and Explicit Series Solution with Convergence Analysis", Communication in Mathematics, Volume 27, Pages 171-185, 2019, ISSN:1804-1388. (SCOPUS)

16. Kajal Sharma, **Astha Chauhan** and Rajan Arora, "Steepening of Waves in Non-Ideal Reacting Gas with Dust Particles", Indian Journal of Physics, (Springer), DOI/10.1007/s12648- 020-01861-w, 2020, ISSN: 0973-1458. (I.F.: 2.0) (SCI)

17. Mayank Singh, **Astha Chauhan**, Kajal Sharma and Rajan Arora, "Kinematics of Spherical Shock Waves in an Interstellar van der Waals Gas Clouds", Physics of Fluids, Volume 32(10), 107109, 2020, ISSN: 10706631. (I.F.: 4.98) (SCI)

18. Shalini Yadav, **Astha Chauhan** and Rajan Arora, "Invariance Analysis, Optimal System and Conservation Laws of the (2+1)-Dimensional Nonlinear Vakhnenko Equation", Pramana-A Journal of Physics, Volume 98(8), Pages 1-13, 2021, ISSN: 0304-4289. (I.F.: 1.688) (SCI)

19. Kajal Sharma, **Astha Chauhan** and Rajan Arora, "Ionizing Blast Waves in a Non-Ideal Gas under Isothermal Flow Condition: Power Series Method", Physica Scripta, (IOP Science), DOI/10.1088/1402-4896/abca5c, 2020, ISSN: 0031-8949. (I.F.:2.9) (SCI)

20. **Astha Chauhan** and Rajan Arora, "Some Exact Solutions of (1+1)-Dimensional Kaup System and Seventh-Order Kawahara Equation", Malaya Journal of Matematik, Volume 8, No. 1, 151-158, 2020, ISSN: 2319-3786.

21. **Astha Chauhan** and Rajan Arora, "Similarity Solutions of Strong Shock Waves for Isothermal Flow in an Ideal Gas", International Journal of Mathematical Engineering and Management Sciences, 2019, Volume 4, Pages 1094–1107. (I.F.: 1.6) (Scopus)

22. Rajan Arora and **Astha Chauhan**, "Lie Symmetry Analysis and Some Exact Solutions of (2+1)-dimensional KdV-Burgers Equation", International Journal of Applied and Computational Mathematics (Springer), Volume 5:15, No. 1, 2019, 1-13, ISSN 2199-5796. (Scopus)

23. **Astha Chauhan**, Rajan Arora and Mohd. Junaid Siddiqui, "Propagation of Blast waves in a Non-Ideal Magnetogasdynamics", Symmetry (MDPI), 2019, Volume 11(4), Pages 458(1-13), ISSN: 2073-8994 (SCI).

24. Deepika Singh, Rajan Arora and **Astha Chauhan**, "Similarity Solutions for the Strong Shock Waves in magnetogasdynamics under a Gravitational Field", **Ricerche di Mathematica** (2020) 1-20, ISSN:0035-5038, (I.F.: 1.1).

- **Published/Co-published the following chapter/book:**

Astha Chauhan and Rajan Arora, "Similarity Solutions of Spherical Shock Waves in a Self-Gravitating Ideal Gas", (In book: Advances in Applied Mathematical Analysis and Applications: River Publishers), 2019 (SCI).

Mr. Virendra Kumar-

- **Served as Resource Person/Coordinator/member of Organising Committee for the following event:**
    - Completed **FIP** with **"Grade-A"** One-Month Online National Faculty Induction Programme/Orientation Course jointly organized by Daulat Ram College, University of Delhi and Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) of Ministry of Education, 25th February to 27th March 2023.
    - Completed **FDP** with **"Grade-A+**" online Inter-Disciplinary two-week Refresher Course in "Managing Online Classes & Co-creating MOOCS 25.0" from 07 – 21 April 2023.
    - **Co-ordinator** in the In-house SDP on " Enhancing Learning through ICT Tools" organized by the Department of Mathematics, Daulat Ram College from September 13-14, 2024.

- **Presented the following papers/posters:**
    1. Participated and presented paper "***Numerical Methods, Differential Equations, Celestial Mechanics and Space Dynamics"*** in the international conference on Advances in Pure & Applied Mathematics (ICAPAM2024) organized by Shyam Lal College, University of Delhi, Feb. 2024.
    2. Participated and presented a paper in the international conference on ***"Recent Trends in Applied Physical Sciences Using Machine Learning Techniques ICRT-2023"*** organized by Women in STEM, Department of Applied Sciences, 2023.
    3. Participated and presented the paper ***"Analysis of Resonant Curves of Geo-centric Satellite under the Gravitational Effect of the Earth-Moon-Sun system and Earth's Equatorial Ellipticity by using Unperturbed Solution"*** in the International Multidisciplinary Conference on Current Research Trends2022.
    4. Participated and presented the paper ***"Analysis of Resonant Curves in the Geo-centric Satellite due to Earth's Equatorial Ellipticity"*** in the International Conference on Frontier Industrial and Applied Mathematics organized by the Department of Mathematics, Sant Longowal Institute of Engineering and Technology, Longowal, 2021.

- **Published/Co-published the following papers:**
  (APA format for Journal Article)

1. Sushil Yadav, Mukesh Kumar, and **Virendra Kumar.** "Resonant curve of geo-synchronous satellite including effect of earth's equatorial ellipticity and resistive force using perturbations technique." *New Astronomy* 86 (2021): 101573.2.
2. Sushil Yadav, **Virendra Kumar,** and Rajiv Aggarwal. "Effect of Earth's Equatorial Ellipticity on the Resonant Curve and Phase Portrait of Geo-centric Satellite Under the Gravitational Effect of the Earth-Moon–Sun System by Using Unperturbed Solution." *Few-Body Systems* 63, no. 2 (2022): 41.3.
3. Sushil Yadav, **Virendra Kumar**, and Mukesh Kumar. "Analysis of resonant curves and phase portrait in the earth-moon system by using its unperturbed solution and earth's equatorial ellipticity." *New Astronomy* 92 (2022): 101716.
4. Sushil Yadav, **Virendra Kumar,** and Rajiv Aggarwal. "Resonant curves of geo-centric satellite under the gravitational effect of the Earth-Moon-Sun system including Earth's equatorial ellipticity and resistive force using unperturbed solutions." *Advances in Space Research* 70, no. 11 (2022): 3340-3361.
5. Sushil Yadav, Mukesh Kumar, and **Virendra Kumar.** "Analysis of Resonant Curve and Phase Portrait Due to Earth's Equatorial Ellipticity In the Earth-Moon System Using Perturbation Technique." *Journal of Dynamical Systems and Geometric Theories* 20, no. 2 (2022): 275-298.
6. Sushil Yadav, Mukesh Kumar, and **Virendra Kumar.** "(R2033) Resonant curve due perturbations of Geo0Synchronous Satellite including the effect of earth's equatorial ellipticity" *Applications and Applied Mathematics: an international journal (AAM)* 1,(18) 2023: 1932-9466.

Ms. Sapna Kumari Meena-

- **Served as Resource Person/Coordinator/member of the Organising Committee for the following event:**

  - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from September 13-14, 2024.
  - **Resource Person** in the In-house SDP on " Enhancing Learning through ICT Tools" organised by the Department of Mathematics, Daulat Ram College from November 26-27, 2022.

- **Presented the following papers/posters:**

Paper presented in the International Conference on Advances in Pure & Applied Mathematics organised by Shyam Lal College, University of Delhi , entitled as " Effect of the Pseudo Mean Motion on the Dynamics of Perturbed Elliptic Restricted Three- body Problem" on February 8-10, 2024

- **Published/Co-published the following papers:**
  (APA format for Journal Article)

Kaur B, Meena SK, Sharma RK, Aggarwal R. Effect of the Pseudo Mean Motion on the Dynamics of Perturbed Elliptic Restricted Three-Body Problem. Astronomy Reports. 2024 Sep;68(9):938-47.