

BRIJ MOHAN

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Key Skills and Technologies

C/C++, Mathematica, Matlab, R, Python, Maxima, NTL, Linux, HTML, Latex

Employment History

- July 2013 – Present: Assistant Professor (Ad-hoc), Dept. of Mathematics, **Hansraj College**, University of Delhi, Malka Ganj, New Delhi - 110007.
- July 2011 – June 2013: Assistant Professor (Ad-hoc), Dept. of Mathematics, **Keshav Mahavidyalaya**, University of Delhi, Pitampura, New Delhi - 110034.
- July 2009 – June 2011: Assistant Professor (Ad-hoc), Dept. of Mathematics, **Kalindi College**, University of Delhi, East Patel Nagar, New Delhi - 110008.

Qualifications

- 2022-2025: Delhi University – **PhD** in Mathematics (**Pursuing**)
- 2021: Harvard University, USA – **Certificate Course** in CS50: Introduction to Computer Science
- 2009: IIT Delhi – **MTech** in Computer Applications
- 2006: Dept. of Mathematics, CCS Uni. – **MSc** in Mathematics
- 2004: N.A.S. College, CCS Uni. – **BSc** in Mathematics

Achievements

1. Qualified **GATE** in CS (Computer Science & Information Technology) in 2018
2. Qualified **NET-CSIR** with **JRF** in Mathematics in June 2007
3. Qualified **GATE** in Mathematics in 2007
4. Qualified **SET (DRDO)** for Scientist-B in 2006

Research Projects

1. RDC HRC Project: HRC/RDC/2021/RP/16 - “**A study of analytical solutions and dynamical behavior for nonlinear evolution equations using efficient methods**” sponsored by Hansraj College during 2022-2023, (Rs. 42000).
2. Innovation Project: HR-304 - “**Study and Security Analysis of Smart Cards**” sponsored by the University of Delhi during 2015-2016, (Rs. 5-Lakh).

Publications

1. Sachin Kumar, **Brij Mohan**, (2023) *A novel analysis of Cole–Hopf transformations in different dimensions, solitons, and rogue waves for a $(2 + 1)$ -dimensional shallow water wave equation of ion-acoustic waves in plasmas*, Physics of Fluids, 35:127128, (SCI/IF: 4.6), (**Q1**) <https://doi.org/10.1063/5.0185772>
2. **Brij Mohan**, Sachin Kumar, Raj Kumar, (2023) *Higher-order rogue waves and dispersive solitons of a novel P -type $(3+1)$ -D evolution equation in soliton theory and nonlinear waves*, Nonlinear Dynamics, 111:20275–20288, (SCI/IF: 5.6) (**Q1**) <https://doi.org/10.1007/s11071-023-08938-1>
3. Sachin Kumar, **Brij Mohan**, (2023) *Newly formed center-controlled rogue wave and lump solutions of a generalized $(3+1)$ -dimensional KdV-BBM equation via symbolic computation approach*, Physica Scripta, 98(8):085237, (SCI/IF: 3.081), (**Q2**) <https://doi.org/10.1088/1402-4896/ace862>

4. Sachin Kumar, **Brij Mohan**, (2023) *A direct symbolic computation of center-controlled rogue waves to a new Painlevé-integrable (3+1)-D generalized nonlinear evolution equation in plasmas*, *Nonlinear Dynamics*, 111:16395–16405, (SCI/IF: 5.741), (Q1) <https://doi.org/10.1007/s11071-023-08683-5>
5. Sachin Kumar, Amit Kumar, **Brij Mohan** (2023) *Evolutionary dynamics of solitary wave profiles and abundant analytical solutions to a (3+1)-dimensional burgers system in ocean physics and hydrodynamics*, *Journal of Ocean Engineering and Science*, 8(1):1-14, (SCI/IF:7.1), (Q1) <https://doi.org/10.1016/j.joes.2021.11.002>
6. Sachin Kumar, **Brij Mohan** (2022) *A generalized nonlinear fifth-order KdV-type equation with multiple soliton solutions: Painleve analysis and Hirota Bilinear technique*, *Physica Scripta*, 97(12):125214, (SCI/IF: 3.081), (Q2) <https://doi.org/10.1088/1402-4896/aca2fa>
7. **Brij Mohan**, Dasharath Meena (2022) *Application of Hirota's Direct Method to Nonlinear Partial Differential Equations: Bilinear Form and Soliton Solutions*, *Hans Shodh Sudha*, 3(2):31-38, <https://www.hansshodhsudha.com/volume3-issue2/manuscript%203.pdf>
8. Sachin Kumar, **Brij Mohan**, Raj Kumar (2022) *Lump, soliton, and interaction solutions to a generalized two-mode higher-order nonlinear evolution equation in plasma physics*, *Nonlinear Dynamics*, 110:693-704, (SCI/IF: 5.741), (Q1) <https://doi.org/10.1007/s11071-022-07647-5>
9. Sachin Kumar, **Brij Mohan**, Amit Kumar (2022) *Generalized fifth-order nonlinear evolution equation for the Sawada-Kotera, Lax, and Caudrey-Dodd-Gibbon equations in plasma physics: Painleve analysis and multi-soliton solutions*, *Physica Scripta*, 97(3):035201, (SCI/IF:3.081), (Q2) <https://doi.org/10.1088/1402-4896/ac4f9d>
10. Sachin Kumar, **Brij Mohan** (2022) *A novel and efficient method for obtaining Hirota's bilinear form for the nonlinear evolution equation in (n+1) dimensions*, *Partial Differential Equations in Applied Mathematics*, 5:100274, Scopus <https://doi.org/10.1016/j.padiff.2022.100274>
11. Sachin Kumar, **Brij Mohan** (2021) *A study of multi-soliton solutions, breather, lumps, and their interactions for Kadomtsev-Petviashvili equation with variable time coefficient using Hirota method*, *Physica Scripta*, 96(12):125255, (SCI/IF: 3.081), (Q2) <https://doi.org/10.1088/1402-4896/ac3879>
12. Donghoon Chang, Pranav Jain, **Brij Mohan** (2019) *Revenue Generation Strategy through Selfish Mining focusing Multiple Pools of Honest Miners: Revisiting Eyal and Sirer (2014) Selfish Mining Strategy*. <https://doi.org/10.13140/RG.2.2.31415.85928>

Paper Presented

1. **Brij Mohan**, Sachin Kumar, Raj Kumar: "N-soliton bright-dark solutions of a (4+1)-dimensional variable coefficient generalized KP equation in fluid mechanics: Painlevé test and Hirota bilinear method", **International Conference on Advances in Pure and Applied Mathematics (ICAPAM-24)**, Delhi, India, February 08-10, 2024
2. **Brij Mohan**, Sachin Kumar, Raj Kumar: "Center-controlled N-rogue waves to a new generalized nonlinear P-type (3+1)-D evolution equation by a generalized solution of Hirota's N-soliton technique", **6th International Conference FIAM-2023, DUBAI, UAE**, December 21-22, 2023.
3. **Brij Mohan**: "The Future of Higher Education in India and its Challenges", **National Education Conclave: India's Future and Higher Education, Vigyan Bhawan, New Delhi, India**, March 23-24, 2023.

Research/Internship Guidance

4. As **Principal Investigator** in the Research Project: "A study of analytical solutions and dynamical behavior for nonlinear evolution equations using efficient methods.", 2022(Ongoing), RDC, Hansraj College, DU, Delhi.
5. As **Summer Internship Supervisor** of Arju Agarwal (Amity University, Kolkata): "Working with Computer Algebra System through Mathematica", w.e.f May 27- July 20, 2019.
6. As **Internship Supervisor** of Pranav Jain (IIIT Okhla, Delhi): "Revenue Generation Strategy through Selfish Mining focusing Multiple Pools of Honest Miners: Revisiting Eyal and Sirer (2014) Selfish Mining Strategy", 2019.
7. As **Principal Investigator** in the Innovation Project: "Study and Security Analysis of Smart Cards", 2015-2016, University of Delhi, Delhi.

Administrative Assignments

1. **Research Coordinator**, RDC, Hansraj College, 2023-2024
2. **Member**, Collaboration & Community, Committee of RDC, Hansraj College, 2022-2023.
3. **Member**, ICT Committee, Hansraj College, 2021-2022.
4. **Member**, Portal Committee, Hansraj College, 2015-2016.
5. **Convenor**, Vision Society (Hans Vision, Hansraj College), 2014-2015.
6. **Convenor**, Pixels Society, Hansraj College, 2014-2015.
7. **Stall Guide**, Antardhvani-Hansraj College, 2015.

Lecture Delivered

1. On "**Numerical Optimization: techniques and applications**" in National Workshop on Numerical Optimization and its Future Perspectives at DDU College, University of Delhi, on March 12 – 16, 2024.
2. On "**Prompting AI tools and Writing**", in One-week workshop: ICT tools and Artificial Intelligence, organized by Malviya Mission Center, UGC, Ministry of Education, Govt. of India, January 8-12, 2024.
3. On "**Using Mathematica as a Scientific tool in Teaching and Research**", for FDP: Interdisciplinary Learning in Department of Applied Sciences, Maharaja Agrasen Institute of Technology, Rohini, Delhi on August 9, 2023.
4. On "**Latex**" in two-day's workshop, organized by Operation Research Society of India (ORSI): Meerut chapter & Vardhman College, Bijnor, UP on February 25-26, 2023.
5. On "**Coding in Mathematics**" in 3 days workshop organized by DIET, Keshavpuram, Delhi on 3-6 October 2022.
6. On "**Mathematica - A System for Modern Technical Computing**" for FDP organized by MHFDC, Hansraj College, DU on August 21-26, 2020.
7. On "**Managing Online Classes: Teaching Learning Tools and e-Content Generation**" for FDP organized by Bharti College, DU on August 17-22, 2020.
8. On "**Microsoft Teams**" for the faculty members of Hansraj College, organized by MHFDC, Hansraj College, DU on August 9, 2020.
9. On "**Applications of Computer Algebra System - Mathematica**" in One-day Workshop, organized by MMH College, Ghaziabad, UP on September 29, 2018.
10. On "**Mathematica: A Tool for Computational Analysis**" in Faculty Development Programme, organized by Department of Mathematics, Hansraj College, University of Delhi on March 10-11, 2018.
11. On "**Digital Literacy: An Introduction to ICT Skills**" in Faculty Development Programme, organized by Department of Physics & Electronics, Hansraj College, University of Delhi on September 15-17, 2017.
12. On "**Understanding Interrelations between the Topics of Mathematics**" & "Importance of Prime Numbers & their Utilization in the Modern Era" in TGT Teachers Training, Bal Bharti Public School, Pitumpura, on 23rd May and 26th May, 2017.
13. On "**LaTeX & Website Designing**" in National Workshop, organized by the Department of Mathematics, Shaheed Bhagat Singh College, University of Delhi on August 11-12, 2016.
14. On "**Illustration through Intuitive Examples**" in Workshop on Foundation Course, at Cluster Innovation Centre, University of Delhi on July 15, 2013.
15. As Guest faculty in **Bhaskaracharya College of Applied Sciences**, University of Delhi, 2012-2013.
16. As Guest faculty in **Dayal Singh College**, University of Delhi, 2011-2012.
17. As Guest faculty in **PGDAV (eve.) College**, University of Delhi, 2011-2012.

Workshops, Conferences, FDPs Talks (Organized)

1. Seminar on "**Annual Academic Meet: Shri Shanti Narayan Mathematics Conclave-2021**" of Department of Mathematics, Hansraj College on March 7-8, 2021.
2. Workshop on "**How to plan projects: Investigatory approach to learning and hands on experience with 3M's-Maple, Mathematica and Matlab**" in Department of Mathematics, Hansraj College, University of Delhi on February 9, 2021.

3. Talk on “**Educational and Political Challenges before Young India: Dr. Ambedkar’s Insight**” under the aegis of Ambedkar Study Circle in Hansraj College, University of Delhi on February 18, 2019.
4. FDP on “**Software Packages for Mathematical Sciences**” in Department of Mathematics, Hansraj College, University of Delhi on November 14-19, 2018.
5. FDP On “**Mathematica: A Tool for Computational Analysis**” in the Department of Mathematics, Hansraj College, University of Delhi on March 10-11, 2018

Workshops, Conferences, FDPs (Participated)

1. International Conference on **Recent Developments in Theory, Computation & Application of Differential Equation**, January 21-23, 2019, South Asian University, New Delhi, Delhi.
2. Workshop on **LaTeX** organized by Department of Mathematics, Hansraj College, University of Delhi on April 9, 2016.
3. National Conference on **Advances in Mathematics**, 7-8 March, 2014, Hansraj College, University of Delhi, Delhi.
4. Workshop on **Foundation Course Building Mathematical Ability**, 24-26 June, 2013, University of Delhi, Delhi.
5. National workshop on **Optimization Techniques & Their Applications**, 5-11 June, 2013, MNNIT Allahabad.

Arts & Culture

1. Achieved the first prize for Mathematical Poetry “**Duvidhaa**” in **National Mathematics Day** by Department of Mathematics, University of Delhi, 22 December 2022.
2. Awarded an honor for realistic story writing “**Zid ki Udaan**” by Hindi Academy, Government of Delhi published in Indraprasth Bharti, December 2016.
3. Enacted in play themed “**Surgery**” in “Chekhov ki Duniya” at Hansraj College, March 24, 2017.
<https://www.youtube.com/watch?v=nD3HO6ubHQM>
4. Play musical instruments such as Keyboard, Guitar, Flute, Mouth Organ, Cajon.
5. Write Hindi/English Articles, Stories.

Other Details

Father’s Name : Mr. Mam Chand
Mother’s Name : Late Mrs. Jag Roshni
DOB : 01 January 1984
Marital Status : Single
Language Known : Hindi, English
Permanent Address : 106, Achhrounda, Partapur, Meerut, Uttar Pradesh – 250103.
Current Address : C-336, Banke Bihari Sharnam, Raj Nagar Extension, Ghaziabad, UP-201017.

Hobbies : Hindi Poetry: www.brijpoems.blogspot.in.
Chess (Captain College Team in Graduation 2002-2004)
Photography: www.brijmohan.in
Short Hindi Stories: **Zid ki Udaan, Dibiya**, and others
Web Development, Digital Contents, Blogs
Social Work:
1. iPA_inspired Progressive Association | Meerut (Founder)
2. Ambedkar Mission Siksha Trust, Ghaziabad (Member)

I sincerely acknowledge that all details furnished in this CV are true to the best of my knowledge.

