

# Dr. AVINITA GAUTAM



Post Doc Fellow, Newton-Bhabha Fellow 2020,  
DST-INSPIRE Fellow

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## PERSONAL INFO

25<sup>th</sup> July 1992

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Female

Married

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Samne Ghat, Varanasi, Uttar Pradesh-  
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avinita-gautam-83b427120/](https://www.linkedin.com/in/dr-avinita-gautam-83b427120/)

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## EDUCATION

### May 2017-April 2022

PhD Mathematics  
DST- Centre of Interdisciplinary  
Mathematical Science, Institute of  
Science, Banaras Hindu  
University, Varanasi, India

Thesis Title: Impact of Nonlinear Dynamics  
and Chaos in Some Computational Models of  
Neurological Disorders  
Thesis Submission: 19<sup>th</sup> April 2022  
Final Viva: 24<sup>th</sup> Feb 2023  
Degree Awarded: 16<sup>th</sup> Dec 2023

Supervisor: Dr. Anupam Priyadarshi  
Department of Mathematics, BHU,  
Varanasi, India

### June 2014-June 2016

M.Sc. Mathematics  
Central University of South Bihar,  
India

Marks: 8.37 CGPA (Out of 10)  
Gold Medalist of M.Sc. Mathematics

### June 2011-April 2014

B.Sc. Math (Hons.)  
Patna Women's College  
Patna University, Patna,  
Bihar, India

Marks: 88.25 % (Mathematics)  
80.67% (Aggregate)  
1<sup>st</sup> Topper of College  
2<sup>nd</sup> Topper of University

### April 2009-May 2011

12<sup>TH</sup> BOARD, CBSE  
Kendriya Vidyalaya, Sonpur  
Bihar, India

Marks: 83.6%  
Specialization: Science (MPC)

### April 2008-May 2009

10<sup>TH</sup> BOARD, CBSE  
Kendriya Vidyalaya, Hajipur  
Bihar, India

Marks: 85.8%

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## RESEARCH EXPERIENCE

**University of Catania** -Post-doctoral Fellowship

**May 2022 –May 2023**

Post-Doctoral Fellow

Lab: Department of Drug and Health Sciences, University of Catania, Catania, Italy

**University of Cambridge** -Newton-Bhabha Fellowship 2020

**September 2021 –January 2022**

Student Visitor

Lab: Department of Veterinary Medicine, University of Cambridge, U.K.

Project Topic: To develop a data-driven model combining the kinetics of viruses and antibodies in bats.

**The Institute of Mathematical Sciences, Chennai**- AIS Mathematical Biology (2018), Workshop

**2nd Dec 2018-15th Dec 2018**

Research Fellow

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## TEACHING EXPERIENCE

**Assistant Professor**, Patna Women's College, Patna University, Bihar, India

**January 2021–April 2021**

Subject: Mathematics

Work: Online Teaching

**Lab Assistant**, DST-CIMS, Institute of Science, Banaras Hindu University, Varanasi

**August 2019–December 2019**

Subject: Mathematics and Computing

**Campus Associate**, Azim Prem Ji Foundation, Tonk, Rajasthan, India

**July 2016–May 2017**

Subject: Mathematics

Work: Capacity building of teachers of government schools, fieldwork and working with students in mathematics subjects.

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## INVITED TALK

- ✎ Invited talk on Faculty Development Program titled “**Advancing Research Methodology through Scientific Tools and Artificial Intelligence**” for STEM Professionals w.e.f. Feb 5, 2024, to Feb 9, 2024, organized by MTTF in collaboration with Sardar Vallabhbhai National Institute of Technology, Surat, INDIA; Poornima College of Engineering, Jaipur, INDIA; Nexus University, South Africa; Poornima Innovation & Incubation Cell, Jaipur, India; and MTTF, Fazilka, INDIA.
- ✎ Invited talk on "**International Workshop on Computational Special Functions and Their Applications**" w.e.f. May 24, 2023, to May 30, 2023, organized by MTTF in collaboration with Malviya National Institute of Technology, Jaipur, INDIA; Sardar Patel University, Anand, INDIA; Central University of Punjab, Bathinda, INDIA.
- ✎ Invited talk on "**One-week Training/ Workshop on Mathematical Modeling with MATLAB: Models, Methods and Analysis**" w.e.f. May 15, 2023, to May 21, 2023, organized by MTTF, INDIA.
- ✎ Guest Lecture on “**Mathematical Modelling and its Application**” organized by Patna Women's College, Patna University, Bihar, India on 25th April 2023.

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## COMPUTER SKILLS

Expertise: MATLAB, XPPAUT, RStudio, PowerPoint, Word, Excel, Scilab, Mathematica and Latex  
Knowledge: C programming, COPASI, Photoshop, and Python

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## ACHIEVEMENTS

- Awarded by **Post-Doctoral Fellowship 2022**
  - Awarded by **Newton-Bhabha Fellowship 2020**
  - DST Inspire **SRF**, 2020
  - Worked as a **Resource Person** in two two-day workshops on “Mathematics for Biologists Using Computational Tools” organized by the Bioinformatics Department, MMV, BHU, Varanasi.
  - DST Inspire **JRF**, 2017.
  - **Gold Medalist** of Central University of South Bihar in M. Sc Mathematics (2014-16)
  - **2<sup>nd</sup> Topper** of Patna University in B. Sc Math Hons. (2011-14)
  - **UG Rank Holder Scholarship** Program Scholar for Post-Graduation (2014)
  - **State Award** in Bharat Scouts & Guides
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## PUBLICATIONS

1. **Avinita Gautam** and Anupam Priyadarshi, **Mathematical modelling of Toxoplasma Gondii and host immune response**, AIP Conference Proceedings 1975, 030002 (2018); American Institute of Physics, <https://doi.org/10.1063/1.5042172>
2. **Gautam A.**, Priyadarshi A. (2022) **Mathematical Perspective of Hodgkin-Huxley Model and Bifurcation Analysis**. Methods of Mathematical Modelling and Computation for Complex Systems. Studies in Systems, Decision and Control, vol 373. Springer, Cham. [https://doi.org/10.1007/978-3-030-77169-0\\_3](https://doi.org/10.1007/978-3-030-77169-0_3)
3. **Avinita Gautam** and Anupam Priyadarshi, **Periodic firings in neurons with external sinusoidal applied current**, Journal of Mathematical and Computational Science, Vol 9, No 6 (2019), 707-725 <https://scik.org/index.php/jmcs/article/view/4223>
4. Ashutosh Maurya, Anupam Priyadarshi and **Avinita Gautam**, **Competition enhances Coexistence and support Biodiversity**, AIP Conference Proceedings 2253, 020025 (2020), <https://doi.org/10.1063/5.0018929>
5. **Avinita Gautam** and Anupam Priyadarshi, **Sensitivity of Dynamics of Toxoplasma Gondii and Host Immune Response**. Chaotic Modeling and Simulation (CMSIM) 2: 71–90, 2021, ISSN 2241-0503 [http://www.cmsim.eu/papers\\_pdf/april\\_2021\\_papers/April\\_1\\_2021\\_CMSIM\\_Gautam\\_71-90.pdf](http://www.cmsim.eu/papers_pdf/april_2021_papers/April_1_2021_CMSIM_Gautam_71-90.pdf)
6. Anupam Priyadarshi, **Avinita Gautam**, and Akash Gautam, **Odd Ratio**, In Vonk J., Shackelford T. (eds) Encyclopedia of Animal Cognition and Behavior. Springer, Cham. (2020) [https://doi.org/10.1007/978-3-319-47829-6\\_185-1](https://doi.org/10.1007/978-3-319-47829-6_185-1)
7. **Avinita Gautam** and Anupam Priyadarshi, **Impact of External Applied Currents in BVP Model**, ITM Web of Conferences. Vol. 34. EDP Sciences, 2020 <https://doi.org/10.1051/itmconf/20203403007>

*\*\*Note: There are some papers in the lineup\*\**

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## CONFERENCES

1. Attended and **made an oral presentation** at the 6<sup>th</sup> China India Japan Korea Mathematical Biology Colloquium cum Conference held at the Department of Mathematics and Statistics, IIT Kanpur from 23<sup>rd</sup> August to 26<sup>th</sup> August 2017 on the topic “Epilepsy-Its Chaotic Behaviour and Mathematical Modelling”.
2. **Participated in a poster presentation** on “Epilepsy-Its Chaotic Behaviour and Mathematical Modelling” at 2<sup>nd</sup> Institution Day (11<sup>th</sup>-12<sup>th</sup> December 2017).
3. Attended and **made an oral presentation** at the International Conference on Mathematical Modelling and Computations in Bio-Systems held at the Department of Mathematics, IIT ROORKEE from 12<sup>th</sup> March to 14<sup>th</sup> March 2018 on the topic “A Mathematical model for Toxoplasma gondii and host immune response dynamics”.
4. Attended and **made an oral presentation** at the One-day National Conference on Recent Advances in Mathematical Sciences held at DST-Centre of Interdisciplinary Mathematical Sciences, on 22<sup>nd</sup> April 2018 on the topic “Dynamics of T. gondii within-host and between-host”.
5. Attended and **made an oral presentation** at the International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2018) held at the Department of Mathematics, NIT Hamirpur (H.P.) from 26<sup>th</sup> April to 27<sup>th</sup> April 2018 on the topic “Mathematical Modeling of Toxoplasma Gondii and Host Immune Response”.
6. Attended workshop on **Differential Equation, Bifurcation and Chaos with Numerical Simulation in MATLAB** 27<sup>th</sup>-28<sup>th</sup> October 2018 at the Department of Mathematics, Banaras Hindu University, Varanasi.
7. Attended “**International Conference on Neuroscience and XXXVI Annual Meeting of Indian Academy of Neurosciences**” from 29<sup>th</sup> -31<sup>st</sup> October 2018 on “**Translation Research in Improving Mental Health**” at Centre of Advance Study, Department of Zoology, Banaras Hindu University, Varanasi.
8. Attended **AIS in Mathematical Biology, 2018** at The Institute of Mathematical Sciences, Chennai -600113 from 3<sup>rd</sup> December to 15<sup>th</sup> December 2018.
9. Attended workshop on “Exploring Some Applications of Mathematical Sciences” from 19-20 January 2019 at the Department of Mathematics, Banaras Hindu University, Varanasi.
10. Attended and **made an oral presentation** at the National Conference on Recent Advances in Mathematics and Scientific Computing (RAMSC-2019) held at the Department of Applied Sciences, MMMUT, Gorakhpur from 5<sup>th</sup> April to 6<sup>th</sup> April 2019 on the topic “Periodic External Currents and Transmission of Neural Signals”.
11. Attended and **made an oral presentation** at “Second International Conference on Applications of Mathematics to Nonlinear Sciences (AMNS-2019)” held at Pokhara, Nepal from 27<sup>th</sup> June 2019 to 30<sup>th</sup> June 2019 on the topic “Effect of External Applied Current on Neural Signals and Bifurcation Analysis”.
12. Attended and **made an oral presentation** at “Second International Conference on Mathematical Modelling, Applied Analysis and Computation (ICMMAAC-2019)” held at JECRC, Jaipur from 8<sup>th</sup> August 2019 to 10<sup>th</sup> August 2019 on the topic “Mathematical Perspective of Hodgkin-Huxley Model and Bifurcation Analysis”.
13. Attended and **made an oral presentation** the 35<sup>th</sup> Annual Conference of the Mathematical Society –BHU on “Advancements in Mathematical Analysis and their Application” (AMATA-2019), in the Department of Mathematics, Institute of Science, Banaras Hindu University-Varanasi from 11<sup>th</sup> November 2019 to 12<sup>th</sup> November 2019.
14. Attended the two-day International Workshop on “Numerical Methods in Scientific Computing”, during 21<sup>st</sup> -22<sup>nd</sup> February 2020 at South Asian University, New Delhi, India.
15. Attended the National *Webinar* on “Impact of Lockdown on Biodiversity” on 5<sup>th</sup> June 2020 organized by SKMU, Dumka, Jharkhand.

16. Attended the one-day *Webinar* on “Academic Publishing and Enhancing Research Effectiveness” on 9<sup>th</sup> June 2020 organized by Dr. Zakir Husain Library, Jamia Millia Islamia, New Delhi.
17. Attended the one-day National *Webinar* on “Application of Algebra and Analysis” on 14<sup>th</sup> June 2020 organized by the Department of Mathematics, Shri Muktanand College, Aurangabad.
18. Completed an online non-credit course on “COVID-19 Contact Tracing” organized by Johns Hopkins University offered through Coursera on 14<sup>th</sup> June 2020.
19. Attended the one-day National *Webinar* on “Research Methodology” on 15<sup>th</sup> June 2020 organized by Research Center Political Science and Economics, Yashwantrao Chavan College, Nagpur.
20. Attended the *Webinar* on “Linear Regression” on 15<sup>th</sup> June 2020 organized by Dr. Shivanand Nautiyal Government Post Graduate College, Karan Prayag, Chamoli (Uttarakhand).
21. Attended three days International Webinar on “Google Mathematical Tools in Research: Theory and Applications”, from 15<sup>th</sup> – 17<sup>th</sup> June 2020 organized by the Department of Mathematics (FOECS) TMU, India.
22. Attended the *Webinar* on “Developing Leadership Skills” on 18<sup>th</sup> June 2020 organized by De. Shivanand Nautiyal Government Post Graduate College, Karanprayag, Chamoli (Uttarakhand).
23. Attended the **Faculty Development Programme** on “Role of LaTeX in Scientific Writing” from 19<sup>th</sup> -21<sup>st</sup> June 2020 organized by the Department of Mathematics, Babu Banarsi Das Northern India Institute of Technology, Lucknow.
24. Attended a one-week online **Faculty Development Programme** on “Mathematics: A Practical Approach in Science and Technology”, from 28<sup>th</sup> June – 3<sup>rd</sup> July 2020 organized by the Department of Basic Science and Humanities, Deogiri Institute of Engineering and Management Studies, Aurangabad (Maharashtra).
25. Attended and **made an oral presentation** at a three-day international web conference (CMSIM 2020) on “Chaotic Modeling and Simulation”, from 22<sup>nd</sup> October – 24<sup>th</sup> October 2020 organized by Athens, Greece on the topic “Sensitivity of Dynamics of Toxoplasma Gondii and Host Immune Response”.
26. Attended and **made an oral presentation** at a three-day international conference (ICAMNM 2020) on “Applied Mathematics and Numerical Methods”, from 29<sup>th</sup> October – 31<sup>st</sup> October 2020 organized by the Department of Applied Mathematics, Faculty of Science, University of Craiova, Romania on the topic “Impact of External Applied Currents in BVP Model”.

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## REFERENCES

*(Available on Demand)*

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## DECLARATION

I hereby declare that all the particulars stated above are true to the best of my knowledge and beliefs.

*Dr. Avinita Gautam*

Date:04/02/2024