

# CURRICULUM VITAE

## PERSONAL DETAILS:-

<b>Name</b>	Dr. Ravikumar Ratilal Panchal
<b>Designation</b>	Assistant Professor
<b>Address (Work and Communication)</b>	Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, - 388120 Dist: Anand, Gujarat (India)
<b>Email Address</b>	<a href="mailto:ravipanchal1712@spuvvn.edu">ravipanchal1712@spuvvn.edu</a>
<b>Specialization</b>	Applied Mathematics, Theory of Relativity

## ACADEMIC QUALIFICATIONS:-

- Ph.D. (Mathematics), 2017**, Sardar Patel University
- M.Phil (Mathematics), 2012**, Sardar Patel University
- M. Sc. (Mathematics), 2010**, Sardar Patel University
- B. Sc. (Mathematics), 2008**, Sardar Patel University

## Major/Minor Research Projects

- (1) Completed SEED Money project funded by Sardar Patel University sanctioned for period of 2 years from 1<sup>st</sup> October, 2022 to 30<sup>th</sup> September, 2024. Title of the project was, “*Potential Formalisms in General Relativity using Tetrad Formalisms*”. Grant received: Rs. 1,00,000/-

## M.Sc. Summer Internship Project Guided

- (1) Hinjal M. Thanki, “*Study of Motion of Spring-Mass Systems*”, during Summer - 2024.
- (2) Divya S. Rana, “*A Study of Acceleration of the Universe using Theory of Gravity*”, during Summer - 2025.

## PAPERS PUBLISHED IN INTERNATIONAL JOURNALS:-

- (1) Hasmani, A. H., and Ravi Panchal., “*Algebraic computations of general observer quantities using Mathematica*”, *Astrophysics and Space Science*, 359.1 (2015): 1.  
doi: [10.1007/s10509-015-2465-6](https://doi.org/10.1007/s10509-015-2465-6) (I.F. 1.678) ISSN: 1572-946X
- (2) Hasmani, A.H., Patel, B.N., Panchal, R., “*On Algebraic Computations of Electric and Magnetic parts of the Weyl Tensor*”, *International Journal of Mathematics and Scientific Computing*, 6.1: (2016): 7. ISSN: 2231-5330
- (3) Hasmani, A.H., and Panchal, R., “*Lanczos Potential for Some Non-Vacuum Spacetimes*”, *The European Physical Journal Plus*, 131.9 (2016): 1.  
doi: [10.1140/epjp/i2016-16336-7](https://doi.org/10.1140/epjp/i2016-16336-7) (I.F. 1.753) ISSN: 2190-5444
- (4) Hasmani, A.H., Patel, A.C., and Panchal, R., “*Interaction of Electromagnetism and Gravity for pp-waves Spacetimes*”, *Mathematics Today*, 32 (2016): 47. ISSN: 0976-3228

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- (5) Hasmani, A.H., and Panchal, R., “*Electric and Magnetic parts of the Weyl Tensor and Spin Coefficients*”, Journal of Dynamical Systems and Geometric Theories, 15.1 (2017): 37.  
doi: [10.1080/1726037X.2017.1323417](https://doi.org/10.1080/1726037X.2017.1323417) ISSN: 2169-0057
  - (6) Hasmani, A.H., Patel, A.C., and Panchal, R., “*Lanczos Potential for Weyl Metric*”, PRAJÑĀ - Journal of Pure and Applied Sciences, 24-25 (2017): 11. ISSN: 0975-2595
  - (7) Panchal, R., Patel, A.C., Hasmani, A.H., “*On Lanczos Potential for Spherically Symmetric Spacetimes*”, Journal of the Tensor Society, 13 (2020): 31. ISSN: 0974-5428
  - (8) Abdelgaber, M., Mourad, M.F. & Panchal, R., “*Energy content, centre of mass and Dirac spin of cylindrically rotating solution in the teleparallel gravity*”, Pramana - J Phys, 97.193 (2024).  
<https://doi.org/10.1007/s12043-023-02671-5> (2022 **I.F. 2.8**)
  - (9) Soni, S.V., Panchal, R. and Hasmani, A.H., “*Solution of Weyl–Lanczos relations for Morris–Thorne wormhole*”, General Relativity and Gravitation, 56.9 (2024).  
<https://doi.org/10.1007/s10714-023-03195-4> (2023 **I.F. 2.1**)
  - (10) Panchal, R., Hasmani, A.H., L’opez-Bonilla, J. “*On the Lanczos Potential*”, Journal of the Tensor Society, 17 (2024): 54-59. ISSN: 0974-5424  
<https://doi.org/10.56424/jts.v17i01.201>
  - (11) Hasmani, A.H., Soni, S.V. and Panchal, R., “*Electromagnetic Multipoles for Morris–Thorne wormhole*”, The Bulletin of the Calcutta Mathematical Society, 117.1 (2025): 51-62.  
ISSN: 0008-0659
  - (12) Panchal, R., Sanjava, Divya G., Hasmani, A.H., Mishra, B., “*Evolutionary Phase of Universe in  $f(R, L_m, T)$  Gravity: The Dynamical System Analysis*”, (Communicated).  
<https://doi.org/10.48550/arXiv.2602.08562>

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#### **PAPER PUBLISHED IN NATIONAL JOURNAL:-**

- (1) Panchal, R., “*FLRW Metric and Lanczos Potential*”, GIT-Journal of Engineering and Technology, 11 (2018): 26. ISSN: 2249 – 6157.

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#### **PAPER PUBLISHED IN PROCEEDINGS OF NATIONAL CONFERENCE:-**

- (1) Hasmani, A.H., and Panchal, R., “*Algebraic Computations of Complex Tetrad Components of Ricci Tensor*”, In Proceedings of Recent Trends in Mathematics and Statistics, (2015): 97. ISBN: 978-81-925005-4-6.

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#### **PAPER PRESENTED IN INTERNATIONAL CONFERENCE :-**

- (1) “*On Algebraic Computations of Electric and Magnetic parts of the Weyl Tensor*”, International Conference in General Relativity, during 25<sup>th</sup>-28<sup>th</sup>, November, 2015, held at the Department of Mathematics, SBG Amravati University, Amravati, Maharashtra.
- (2) “*Solution of Weyl-Lanczos Relations for Axially Symmetric Spacetime*”, International Conference on Mathematical Sciences and Its Applications, during 28<sup>th</sup>-30<sup>th</sup>, July, 2022, held at the School of Mathematical Sciences, Swami Ramanand Teerth Marathwada University, Nanded, Maharashtra.

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#### **PAPERS PRESENTED IN NATIONAL CONFERENCE :-**

- (1) “*Lanczos Potential for General Axially Symmetric Space-times*”, National seminar on advances in Mathematics: Historical developments and engineering applications, during 9<sup>th</sup>-11<sup>th</sup>, January 2012, held at MBICT, New Vallabh Vidyanagar, Gujarat.

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- (2) “*Algebraic Computations of Complex Tetrad Components of Ricci Tensor*”, Recent Trends in Mathematics and Statistics, on 5<sup>th</sup>, September, 2015, held at Maharshi Dayanand College, Mumbai, Maharashtra.
  - (3) “*Lanczos Potential for Spherically Symmetric Spacetimes*”, National Conference on Differential Geometry and General Relativity, during 28<sup>th</sup>-29<sup>th</sup>, November, 2017, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.

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**LECTURE DELIVERED IN WORKSHOP/WEBINAR:-**

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- (1) Delivered a lecture on “*Introduction to Mathematica*”, on 23<sup>rd</sup> July, 2020 in a webinar organized by Parul Institute of Technology, Vadodara, Gujarat.
- (2) Delivered a lecture on “*Problems in Classical Mechanics*”, on 23<sup>rd</sup> February, 2023 in National Workshop on Problem Solving in Mathematics organized during 20<sup>th</sup> - 24<sup>th</sup>, February, 2023 by the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (3) Delivered 6 Lectures (1.5 hours each) and Conducted 14 Lab sessions (1.5 hours each) in National workshop entitled “*Introduction to Mathematica and Algebraic Computations in General Relativity*”, from 29<sup>th</sup> May, 2023 to 04<sup>th</sup> June, 2023 organized by the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (4) Delivered a Guest lecture “*Life and Work of Prof. P.C. Vaiyda*”, on 08<sup>th</sup> August, 2023 organized by the Department of Applied and Interdisciplinary Science, Sardar Patel University and Vigyan Gurjari, Gujarat.
- (5) Delivered 3 Lectures (2 of 1.5 hours and 1 of 2 hours) in “*AICTE ATAL Faculty Development Program on LaTeX and MATHEMATICA-2023*” organized during 11<sup>th</sup> to 16<sup>th</sup> December, 2023 by the Department of Applied Sciences, G.H. Raisoni College of Engineering, Nagpur.
- (6) Delivered a lecture on “*Problems in Classical Mechanics*”, on 13<sup>rd</sup> February, 2024 in National Workshop on Problem Solving in Mathematics organized by the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (7) Delivered 2 lectures (1.5 hours each) on 21<sup>st</sup> October, 2024 in National Workshop on “*Data Analysis in Cosmology using Python*” organized by the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (8) Delivered 2 lectures (2 hours each) in National Workshop on “*Interdisciplinary Computing in Basic and Applied Sciences with Python and Open Source Software*” organized during 09<sup>th</sup> -15<sup>th</sup> December, 2024 jointly by MathTech Thinking Foundation, Fazilka, INDIA; Sardar Vallabhbhai National Institute of Technology, Surat and Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (9) Delivered a lecture (1.5 hours) on “*Problems in Lagrangian and Hamiltonian Formalism*”, on 20<sup>th</sup> January, 2025 in National Workshop on Problem Solving in Mathematics-XIII organized during 20-24, January, 2025 by the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (10) Delivered a lecture (1 hour) on “*NEP-2020 Orientation and Implementation*”, on 11<sup>th</sup> February, 2025 at C.B. Patel Arts College, Nadiad, Gujarat.
- (11) Delivered a lecture on “*Problems in Classical Mechanics*” at National Workshop on “*Problem Solving in Mathematics – XIV*”, during 03<sup>rd</sup>-07<sup>th</sup>, February, 2026, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.

## **CHAired SESSION**

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- (1) “*Prof. P.C. Vaidya National Conference on Mathematical Sciences*”, during 15<sup>th</sup>-16<sup>th</sup>, March, 2022, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (2) “*International Conference on Mathematical Sciences and Its Applications*”, during 28<sup>th</sup>-30<sup>th</sup>, July, 2022, held at the School of Mathematical Sciences, Swami Ramanand Teerth Marathawada University, Nanded, Maharashtra.
- (3) “*National Conference on Special Functions and Allied Areas*”, during 17<sup>th</sup>-18<sup>th</sup>, March, 2023 held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.

## **Worked in Organizing committee Seminar/Conference/Workshop**

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- (1) “*Prof. P.C. Vaidya National Conference on Mathematical Sciences*”, during 15<sup>th</sup>-16<sup>th</sup>, March, 2022, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Chair Person, Member of Organizing Committee)
- (2) “*National Workshop on Problem Solving in Mathematics – XI*”, during 20<sup>th</sup>-24<sup>th</sup>, February, 2023, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Organizing Secretary)
- (3) “*National Conference on Special Functions and Allied Areas*”, during 17<sup>th</sup>-18<sup>th</sup>, March, 2023 held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Member of Organizing Committee)
- (4) National workshop entitled, “*Introduction to Mathematica and Algebraic Computations in General Relativity*”, from 29<sup>th</sup> May, 2023 to 04<sup>th</sup> July, 2023 organized by the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Coordinator)
- (5) National Workshop on “*Problem Solving in Mathematics – XII*”, during 12<sup>th</sup>-17<sup>th</sup>, February, 2024, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Organizing Secretary)
- (6) National Workshop on “*Data Analysis in Cosmology using Python*” during 21<sup>st</sup> -24<sup>th</sup> October, 2024 held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Organizing Secretary)
- (7) National Workshop on “*Problem Solving in Mathematics – XIII*”, during 20<sup>th</sup>-24<sup>th</sup>, January, 2025, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Organizing Secretary)
- (8) National Workshop on “*Problem Solving in Mathematics – XIV*”, during 03<sup>rd</sup>-07<sup>th</sup>, February, 2026, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat. (Co-coordinator)

## **SEMINARS/CONFERENCES ATTENDED:-**

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- (1) “*National Seminar on Astronomy and Astrophysics*”, on 18<sup>th</sup>, April, 2011, held at the Department of Physics, Vallabh Vidyanagar, Gujarat.
- (2) “*National Seminar on Advances in Mathematics: Historical Developments and Engineering Applications*”, during 9<sup>th</sup>-11<sup>th</sup>, January 2012, held at MBICT, Vallabh Vidyanagar, Gujarat.

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- (3) “*Advanced Engineering Mathematics: Project – Implementation and Deliverables*”, on 07<sup>th</sup>, October, 2012, held at Birla Vishvakarma Mahavidyalaya, Vallabh Vidyanagar, Gujarat.
  - (4) “*International Conference on Differential Geometry and General Relativity*”, during 20<sup>th</sup>-22<sup>th</sup>, November, 2012, held at the Department of Mathematics, Aligarh Muslim University, Aligarh, Uttar Pradesh.
  - (5) “*International Conference on Differential Geometry and Relativity*”, during 09<sup>th</sup>-11<sup>th</sup>, November, 2013, held at the Department of Mathematics, DDU Gorakhpur University, Gorakhpur, Uttar Pradesh.
  - (6) “*National Conference on Interdisciplinary Perspectives: Defense Studies, Earth System Science and Bio-Medical Science*”, during 15<sup>th</sup>-17<sup>th</sup>, November, 2013, held at Sardar Patel University, Vallabh Vidyanagar, Gujarat.
  - (7) “*National Seminar on Analysis, Geometry and Applications*”, during 17<sup>th</sup> -18<sup>th</sup>, February, 2014, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
  - (8) “*51th Annual Conference of Gujarat Ganit Mandal*”, during 6<sup>th</sup>-8<sup>th</sup>, November, 2014, held at P.P. Savani Group of Schools, Surat, Gujarat.
  - (9) “*Recent Trends in Mathematics and Statistics*”, on 5<sup>th</sup>, September, 2015, held at Maharshi Dayanand College, Mumbai, Maharashtra.
  - (10) “*International Conference in General Relativity*”, during 25<sup>th</sup>-28<sup>th</sup>, November, 2015, held at the Department of Mathematics, SBG Amravati University, Amravati, Maharashtra.
  - (11) “*Interdisciplinary Research Scholars Meet- 2016*”, during 3<sup>th</sup>-4<sup>th</sup>, March, 2016, held at Sardar Patel University, Vallabh Vidyanagar, Gujarat.
  - (12) “*Differential Geometry and its Applications*”, during 27<sup>th</sup>-28<sup>th</sup>, January, 2017, held at the Department of Mathematics, DDU Gorakhpur University, Gorakhpur, Uttar Pradesh.
  - (13) “*National Conference on Differential Geometry and General Relativity*”, during 28<sup>th</sup>-29<sup>th</sup>, November, 2017, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
  - (14) “*Prof. P.C. Vaidya National Conference on Mathematical Sciences*”, during 15<sup>th</sup>-16<sup>th</sup>, March, 2022, held at the Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
  - (15) “*International Conference on Mathematical Sciences and Its Applications*”, during 28<sup>th</sup>-30<sup>th</sup>, July, 2022, held at the School of Mathematical Sciences, Swami Ramanand Teerth Marathawada University, Nanded, Maharashtra.
  - (16) “*International Conference on Gravitation, Astrophysics and Cosmology*”, during 14<sup>th</sup>-16<sup>th</sup>, June, 2024, held at the Centre for Cosmology, Astrophysics and Space Science, GLA University, Mathura, Uttar Pradesh.
  - (17) “*International Conference on Gravitation, Cosmology, Astrophysics, and Space Sciences*”, during 17<sup>th</sup>-19<sup>th</sup>, October, 2025, organized by Pacif Institute of Cosmology and Selfology (PICS), Sagara, Sambalpur, Odisha.

## **WORKSHOPS PARTICIPATED:-**

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- (1) “*Workshop on Problem Solving in Mathematics*”, during 21<sup>st</sup>-27<sup>th</sup>, February, 2010, Department of Mathematics, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- (2) “*Workshop on Computational Techniques of Geometry in Relativity and Allied Topics*”, during 16<sup>th</sup>-20<sup>th</sup>, November, 2012, Department of Mathematics, Aligarh Muslim University, Aligarh, Uttar Pradesh.
- (3) “*Indo-European Study Group Meeting on Industrial Problems*”, 4<sup>th</sup>-9<sup>th</sup>, January, 2015, Faculty of Technology and Engineering, the M.S. University of Baroda, Vadodara, Gujarat.

## **STTP/TRAINING PARTICIPATED:-**

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- (1) “*Applications of Physics and Mathematics in Engineering*”, during 30<sup>th</sup>, April-5<sup>th</sup>, May, 2018, G.H. Patel College of Engineering and Technology, Vallabh Vidyanagar, Gujarat.
- (2) “*Advanced Learning of Mathematics for Government Polytechnics*”, on 4<sup>th</sup>, July, 2019, Institute of Infrastructure, Technology, Research and Management, Ahmedabad, Gujarat.
- (3) “*Publons Academy Practical Peer Review Course*”, completed on 25<sup>th</sup> June, 2020, Publons Academy.
- (4) “*UDAYAM (Unlimited Digital Advanced Yearlong Academic Method of Learning) E-Content Development Course*” during 28<sup>th</sup> July – 18<sup>th</sup> August, 2020, Jointly Organized by Knowledge Consortium of Gujarat, Ahmedabad and HRDC, Gujarat University.
- (5) “*Comprehensive Online Intellectual Property Rights (IPR)*” during 6<sup>th</sup> July, 2020 to 14<sup>th</sup> September, 2020 organized by Gujarat Student Startup and Innovation Hub (i - Hub).
- (6) “*Leadership development at different levels*” during 12<sup>th</sup> July-16<sup>th</sup> July, 2021, NITTTR, Bhopal, Madhya Pradesh.
- (7) UGC - Sponsered Orientation Programme “*11<sup>th</sup> Online Guru-Dakshita, Faculty Induction Programmes (FIP)*” during 19<sup>th</sup> May, 2022 to 17<sup>th</sup> June, 2022 organized by UGC HRDC, Gujarat University, Ahmedabad-380009
- (8) “*Refresher Course in Mathematics*” (online) during 13<sup>th</sup> July – 26<sup>th</sup> July, 2023, organized by Teaching Learning Centre & Department of Mathematics, Ramanujan College, University of Delhi.

## **LIFETIME MEMBERSHIPS OF LEARNED SOCIETIES:-**

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- (1) Indian Association for General Relativity and Gravitation
- (2) The Tensor Society
- (3) Indian Mathematical Society
- (4) MathTech Thinking Foundation

## **Profile Links:**

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- **Research Gate:** [https://www.researchgate.net/profile/Ravi\\_Panchal3](https://www.researchgate.net/profile/Ravi_Panchal3)
- **Google Scholar:** <https://scholar.google.co.in/citations?user=nsIEGNyAAAAJ&hl=en>
- **ORCID:** <https://orcid.org/0000-0001-8889-7163>