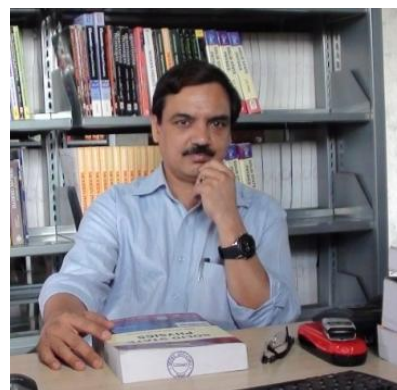


Curriculum Vitae

Dr. Aalok Pandya

Professor and Head
Department of Physics
Chairman, Innovation Centre
Indira Gandhi National Tribal University
Amarkantak 484887
(A Central University by an Act of Parliament of India)
E-mail: aalok.pandya@igntu.ac.in, &
aalok_cosmos@yahoo.com
Ph. No: 91-9413906368 (M);



Research Interests: Quantum Physics; Geometric Quantum Mechanics; Astrophysics

Educational Qualification

* **Doctor of Philosophy (Ph D)**

University of Rajasthan, Jaipur- India.

Title: Study of Quantum Evolution and Gravitation in Search of New Geometry

* **Master of Science (M. Sc.): Physics**

With **first division** from- *M. L. S. University, Udaipur*

* **Master of Science (M. Sc.): Mathematics**

University of Rajasthan, Jaipur

* **National Eligibility Test (NET)- Qualified:** Conducted by **CSIR (1997)**

(**Council of Scientific and Industrial Research**) and **UGC (University Grants Commission)** for the eligibility of *lectureship in colleges and Universities.*

Advisor/Member Advisory Board

1. **Technical Advisor:** Newndra Innovations Pvt. Limited.
<https://www.newndra.com/about/>
2. **Technical Advisor:** Beacon Software Pvt. Ltd.
3. Member of the Syllabus Advisory Committee: **Central University Rajasthan (2011-12).**
4. Member of the Advisory Board: **Sharp Edge Learning (2011-12).**
(**Sharp Edge Learning** is an enterprise for development of **Digital Learning**)
5. **Member: Academic Council (2016-2020)** of JECRC University, Jaipur
6. **Member: Academic Council (2021-till date)** of IGNT (Central) University, Amarkantak.

(Research) Projects Undertaken/Ongoing

- 1. Co-PI: India US Science and Technology Endowment Fund (IUSSTEF): Completed**
(No: IUSSTF/USI-STEM/5th Call/HI-042/2015-16)
Budget: INR- 1,97,39,251.00 (1.973925 Crore)
Title: **Jaipur Belt: Belt System for Body Support**
Funded By: Indo US Science and Technology Forum (IUSSTEF), Fulbright House, N. Delhi
- 2. PI: Indian National Science Academy (INSA) Project: Completed**
No: INSA/RC/HS/296 (Dated 26th June, 2022)
Budget: INR- 10,00,000.00 (Rs 10 Lakh)

Ph.D. (Research) Guidance

Ph.D. Awarded: 01 (Sunitha S.)

Title: Study of Solar Flares Using Recent Data

Ph.D. Guidance (Ongoing): 02

Awards

1. For Best Presentation

In Symposium on- “Environment Conservation in 21st Century”

Organized By: Indian Science Congress

At: University of Rajasthan, Jaipur

On: 5th June, 1997

2. Award of Excellence: National Project Contest for Engineering Students

Held at: Techno-park, Trivendrum

On: 17th and 18th August, 2009

Sponsored By: IEEE, NRDC and Techno-park Kerala

Membership of Professional Bodies/Organizations

- 1. Life Member: Indian Association of General Relativity and Gravitation (S.No: 278/1999)**
- 2. Life Member: Astronomical Society of India (ASI) (L2234/2018)**
- 3. Life Member: Indian Science Congress (L8529/1998)**
- 4. Life Member: Indian Physics Association (GEN/LM/12197/2005)**
- 5. Life Member: Indian LASER Association (LM-695/2005)**
- 6. Life Member: Indian Association of Physics Teachers (Life Member: 11221-L7331/2016)**

List of Research Publications

1. **Aalok Pandya**, Quantum Neighbourhood on the Probability Space: Metricity on the Grassmannian Submanifold, *International Journal of Geometric Methods in Modern Physics* **22** (2025) pp. 2550193-1--2550193-7
<https://www.worldscientific.com/doi/10.1142/S0219887825501932>
2. **Aalok**, Background Independent Quantum Mechanics, Classical Geometric Forms & Geometric Quantum Mechanics-I,
International Journal of Theoretical Physics **48** (2009) pp. 522–534.
<https://doi.org/10.1007/s10773-008-9828-5>
<https://link.springer.com/article/10.1007/s10773-008-9828-5>
(ISSN 0020-7748; Scopus Indexed; SCI Indexed; Impact Factor: 1.6; H Index-51)
3. **Aalok**, Background Independent Quantum Mechanics, Metric of Quantum States, & Gravity: A Comprehensive Perspective,
International Journal of Theoretical Physics, **46** (2007), pp. 3216-3229.
<https://doi.org/10.1007/s10773-007-9438-7>
DOI 10.1007/s10773-007-9438-7
<https://link.springer.com/article/10.1007/s10773-007-9438-7>
(ISSN 0020-7748; Scopus Indexed; SCI Indexed Journal; Impact Factor: 1.6; H Index-51)
4. **Aalok Pandya**, Quantum Trajectories and Schematic Flow of the Probability: Conserved Probability and Conserved Probability Current
Physics Essays, **28** (2) (2015) pp. 193-197.
<http://dx.doi.org/10.4006/0836-1398-28.2.193>
<http://physicsessays.org/browse-journal-2/category/163-issue-2-june-2015.html>
(ISSN 0836-1398; Scopus Indexed; Impact Factor: .6; H Index-13)
5. **Aalok Pandya**, Complementarity, quantization and uncertainty: an analytical perspective of set theory and probability
Physics Essays, **27** (2) (2014) pp. 281-285.
<http://dx.doi.org/10.4006/0836-1398-27.2.281>
<http://www.physicsessays.org/browse-journal-2/product/753-11-aalok-pandya>
(ISSN 0836-1398; Scopus Indexed; Impact Factor: .6; H Index-13)
6. **Aalok Pandya, S.K. Gupta, Dalpat Meena and Lokesh Bharti**, Variation in Cosmic Ray Flux During Solar Eclipse on 21 June, 2020 at Jaipur, India,
Astroparticle Physics **136** (2022) pp. 1-3.
<https://doi.org/10.1016/j.astropartphys.2021.102659>

- <https://www.sciencedirect.com/science/article/abs/pii/S092765052100092X>
(ISSN: 0927-6505; Scopus Indexed; SCI Indexed; Impact Factor: 4.2; H-index: 115)
7. L. Bharti, C. Quintero Noda, S. Rakesh, B. Sobha, **A. Pandya** and C. Joshi, Small scale activity above penumbra of a fast rotating sunspot,
Solar Physics **293**, 46 (2018) pp. 1-7;
<https://doi.org/10.1007/s11207-018-1265-x>
<https://link.springer.com/article/10.1007/s11207-018-1265-x>
(ISSN 0038-0938; Scopus Indexed; SCI Indexed; Impact Factor: 2.682; H Index-104)
8. L. Bharti, C. Quintero Noda, C. Joshi, S. Rakesh and **A. Pandya**, **Fine structures at pore boundary** *Monthly Notices of Royal Astronomical Society Letters* **462** (1), (2016) L93-L97.
<https://doi.org/10.1093/mnrasl/slw130>
<https://academic.oup.com/mnrasl/article-abstract/462/1/L93/2589706?redirectedFrom=fulltext>
(ISSN 1745-3925; Scopus Indexed; SCI Indexed; Impact Factor: 5; H Index-78)
9. **Aalok Pandya**, Tej Bahadur and Sandip Bhattacharya, Astronomical Significance of Sun-Dial in Srirangapatana
Current Science, **116**, NO. 5 (2019) pp. 811-816.
doi: 10.18520/cs/v116/i5/811-816
<https://www.currentscience.ac.in/Volumes/116/05/0811.pdf>
(ISSN 0011-3891; Scopus Indexed; SCI Indexed Journal; Impact Factor: 1.2; H Index-98)
10. **Aalok Pandya**, Tej Bahadur and Sandip Bhattacharya, Astronomical Explanation of the Enigmatic Sun-Dial in Agra, India
Current Science, **120** (5) (2021) pp. 942-945.
doi: 10.18520/cs/v120/i5/942-945
<https://www.currentscience.ac.in/Volumes/120/05/0942.pdf>
(ISSN 0011-3891; Scopus Indexed; SCI Indexed Journal; Impact Factor: 1.2; H Index-98)
11. **Aalok Pandya**, Computational investigation of electrostatic interactions
Physics Essays, **30** (3) (2017) pp. 302-307.
<http://dx.doi.org/10.4006/0836-1398-30.3.302>
<http://www.physicsessays.org/browse-journal-2/product/1590-14-pdf-aalok-pandya>
(ISSN 0836-1398; Scopus Indexed; SCI Indexed Journal; Impact Factor: .6; H Index-13)
12. **Aalok Pandya**, General Topology of the Universe
Applied Mathematics, **5**, No.16 (2014) pp. 2442-2446.
<http://dx.doi.org/10.4236/am.2014.516235>
<http://www.scirp.org/journal/PaperInformation.aspx?PaperID=49368>
(ISSN 2152-7385; Scopus Indexed; SCI Indexed; Impact Factor: 0.6; H Index-15)

13. **Aalok Pandya**, Computational Investigations of the Null Cone Representation of Interactions
Physics Essays, **26** (1) (2013) pp. 24-26.
<http://www.physicsessays.org/browse-journal-2/product/73-7-aalok-pandya>
<http://dx.doi.org/10.4006/0836-1398-26.1.24>
(ISSN 0836-1398; Scopus Indexed; Impact Factor: .6; H Index-13)
14. **Aalok Pandya**, Null Cone Representation of Interactions and Causal Structure
Physics Essays, **25** (2) (2012) pp. 228-232.
DOI: 10.4006/0836-1398-25.2.228
<http://www.physicsessays.org/browse-journal-2/product/167-12-pdf-aalok-pandya>
(ISSN 0836-1398; Scopus Indexed; Impact Factor: .6; H Index-13)
15. **Aalok Pandya** and Ashok Nagawat, The Metric of Quantum States Revisited
Physics Essays, **19** (2) (2006) pp. 263-268.
DOI:10.4006/1.3025793
<http://physicsessays.org/browse-journal-2/category/155-issue-2-june-2006.html>
quant-ph/0205084.
(ISSN 0836-1398; Scopus Indexed; Impact Factor: .6; H Index-13)
16. **Aalok Pandya**, Tej Bahadur and Sandip Bhattacharya, Sun-Dial for Time-Keeping in Jaisalmer Fort, *Indian Journal of History of Science*, **52** (2) (2017) pp. 137-146.
DOI: 10.16943/ijhs/2017/v52i2/49052
<http://insa.nic.in/UI/Journalarticle.aspx?jid=Mw==&&VID=MzMw&&IsNm=SXNzdWUgMg==>
(ISSN 0019-5235; Peer Reviewed)
17. **Aalok Pandya** and J. K. Singhal, Geometry and Structure of Electron: A Discussion
The Bulletin of Indian Association of Physics Teachers, **20** (2003) pp. 402-404.
(ISSN 2277-8950; Peer Reviewed; Impact Factor: 0.0)
18. S N Jafferey, R M Jain, **Aalok Pandya** and Lokesh Bharati, Flux Variation in High Energy Gamma and X- Ray Region during Total, Solar Eclipse -24th October 1995
Kodaikanal Observatory Bulletin, **13** (1997) 235-240.
<https://archive.org/details/in.ernet.dli.2015.177143/page/n249/mode/2up>
(ISSN NO: 0374-3632)
19. Tej Bahadur, **Aalok Pandya*** and Raghuvver Singh Bhati, Kuldhara Devastation and the Great Exodus, *Current Science*, **114**, NO. 5, (2018) pp. 944-946.
<http://www.currentscience.ac.in/Volumes/114/05/0944.pdf>
(ISSN 0011-3891; Scopus Indexed; SCI Indexed Journal; Impact Factor: 1.2; H Index-98)

20. **Aalok Pandya**, Exploring Computational Geometry of Fundamental Interactions in Static Limits, *Physics Essays*, **32**, NO. 3, (2019) pp. 411-416.
<http://dx.doi.org/10.4006/0836-1398-32.3.411>
<https://physicsessays.org/browse-journal-2/category/189-issue-3-september-2019.html>
 (ISSN 0836-1398; Impact Factor: .6; H Index-13)
21. Ashish Sahani, Anil Kumar Jain, Nilesh Satiram Gupta, **Aalok Pandya**, Priya Agarwal, Ganesh Ram Jangir,
European Journal of Medical and Health Sciences **2**, 5 (2020) pp. 1-6.
 DOI: 10.24018/ejmed.2020.2.5.492
<https://www.ejmed.org/index.php/ejmed/article/view/492>
 (ISSN: 2593-8339)
22. Aalok Pandya, *Indian Journal of History of Science* **58** (1) (2023) pp. 57-63.
<https://doi.org/10.1007/s43539-023-00072-6>
[https://insa.nic.in/\(S\(4zr0d3y2c12ztkcp05umh15a\)\)/writereaddata/UpLoadedFiles/IJHS/58_1_7.pdf](https://insa.nic.in/(S(4zr0d3y2c12ztkcp05umh15a))/writereaddata/UpLoadedFiles/IJHS/58_1_7.pdf)
 (ISSN 0019-5235)

Patents (Granted)

1. **Patent of Design (No. 346734-001)**: By the IP India Patent Office, Kolkata.
 Title: Marker Pen Set
2. **Patent of Design (No. 334562-001)**: By the IP India Patent Office, Kolkata
 Title: Baby Milk Bottle

Invited Talks

1. CRR 09: **International conference on "Frontiers of Interface between Statistics and Sciences** (Organized in felicitation of **Prof. C. R. Rao** ("Fisher- Rao Metric" and "Cramer-Rao Rule" fame); Held at – **Central University Hyderabad**, Hyderabad ; December 30, 2009- January 2, 2010
2. **ISITW-2012**: International Scientific Instrument Technology Workshop-2012
 Held at: Instrument Technology Research Centre (ITRC), Hsinchu, Taiwan.
 Duration: 15-26 October, 2012
 Title: Current Research Development in Theoretical Physics
3. **Plenary Talk in**: India-Japan Bilateral Conference: BICON-2015 (**21-24 May, 2015**)
 Sponsored by- Japan Advanced Institute of Science and Technology, Japan

Held at- Biyani Girls' College, Jaipur.

Title: **Dark Energy: From Einstein to WMAP Experiments.**

4. INSPIRE Workshop (19-23 February, 2013)

Organized by: DST, Govt. of India

Held at- University of Rajasthan, Jaipur

Title: **Introduction to Dark Energy**

6. UGC Workshop on Examination and Evaluation (21-26 October, 2013)

Held at: UGC Academic Staff College, University of Rajasthan, Jaipur

Title: The Idea of **Question Bank**

7. IUCAA Workshop on Astronomy and Astrophysics (2-4 September, 2013)

Organized by: IUCAA (Pune) and University of Rajasthan, Jaipur

Title: **Cosmology Today**

8. IUCAA Workshop on Astronomy and Astrophysics (2-4 September, 2013)

Organized by: IUCAA (Pune) and University of Rajasthan, Jaipur

Title: **Open Problems in Astrophysics and Cosmology**

9. DST Sponsored Workshop on Astrochemistry (22-24 December, 2012)

Held at- Birla Planetarium, Jaipur.

Title: **Chemistry of the Ionosphere and the Upper Atmosphere.**

10. DST Sponsored Workshop on Astrochemistry (22-24 December, 2012)

Held at- Birla Planetarium, Jaipur.

Title: **From Exobiology to Astrobiology: Cosmic and Chemical Origin of Life**

11. DST Sponsored Workshop on Astronomy (18-21 December, 2009)

Held at- Birla Planetarium, Jaipur.

Title: **An Overview of Cosmology: A Journey into the Universe.**

12. DST Sponsored Workshop on Astronomy (18-21 December, 2009)

Held at- Birla Planetarium, Jaipur.

Title: **Grand Unification: The Ultimate Reality.**

Presentation in Conferences

1. Annual Conference of Astronomical Society of India (ASI 2022)

ASI 2022, IIT Roorkee (25-29 March, 2022)

Title: Variation in Cosmic Ray Flux During Solar Eclipse on 21 June, 2020

2. International Conference on Gravitation and Cosmology (ICGC 2019)

ICGC 2019, IISER Mohali (10-13 Dec, 2019)

Title: Torsion, Curvature and Geometry of Serret-Frenet Formulae in Geometric Quantum Mechanics

3. **International Conference on Gravitation and Cosmology (ICGC 2007)**

ICGC 2007, IUCAA Pune (16-21 Dec, 2007)

Title: DARK ENERGY, BACKGROUND INDEPENDENT QUANTUM MECHANICS AND THE ORIGIN OF COSMOLOGICAL CONSTANT

4. **International Conference on New Vistas in Pure and Applied Mathematics-2019**

Held at: University of Rajasthan

24-26 November, 2019.

Title: **Grassmanian, $CP(N)$ and $CP(\infty)$: Symmetries of the Projective Hilbert Space**

5. **International Conference on Recent Trends in Mathematics and Their Applications-2016**

Held at: University of Rajasthan

10-12 July, 2016.

Title: **$CP(N)$ to $CP(\infty)$: Cohomology and Symmetries of Background Independent**

Quantum Mechanics

6. **23rd Conference of IAGRG (Indian Association of General relativity and Gravitation)**

and Symposium on Recent Trends in General Relativity, Cosmology and

Astrophysics. Held at- University of Rajasthan,

Jaipur December 7-10, 2004.

Title: Metric of Quantum States: A Comprehensive View

7. **DAE (Deptt. of Atomic Energy) Symposium on High Energy**

Physics Dec 19-22, 2002, Hyderabad Central University, Hyderabad

Title: Metric of Quantum States in Minkowski Space

8. **86th Indian Science Congress (1999)**

Held at- Anna University, Chennai

January 3-7, 1999.

Title: Geometric Aspects of the Radiation Quantization

9. **82nd Indian Science Congress (1995)**

Held at- Jadavpur University, Calcutta

January 3-7, 2000.

Title: Spherical Manifold in Quantum Evolution

Conferences/Work-Shops Organized

1. Organizing Secretary: DST Sponsored-“Workshop on Astrochemistry”

(Held at Birla Planetarium, Jaipur: **22-24 December, 2011**)

2. Organizing Secretary: “International Conference on the History and Development of Mathematics (ICHDM)-2014”

(Held at JECRC University, Jaipur: 29, 30 Nov. and 1 Dec. 2013)

Sponsored By: National Board of Higher Mathematics (NBHM, Deptt of Atomic Energy), DST (India), DST (Rajasthan), CSIR, INSA.

Refresher Courses/Work-Shops/Summer Schools Attended

1. ISITW-2012 (International Scientific Instrument Technology Workshop-2012)

Held at Instrument Technology Research Centre (ITRC), Hsinchu, Taiwan.

(15 October- 27 October, 2012) [12 Days]

2. International Workshop on Quantum Coherence and Decoherence

Held at- **Centro de Ciencias, Benasque, Spain**

(September 13-21, 2008) [9 Days]

3. International Summer School on New Cosmology

Held at- **Australian National University, Canberra (Australia)**

(February 3-13, 2003) [11 Days]

4. IUCAA- Refresher Course in Astronomy and Astrophysics

Held at- **Inter University Centre for Astronomy and Astrophysics, Pune**

(May 16-June 17, 2005) [32 Days]

5. DST Sponsored SERC school on High Energy Physics

Held at– **University of Rajasthan, Jaipur**

Course Contents: Renormalization Group, Standard Model of Cosmology,

Grand Unification, Electro-weak Symmetry and Collider Physics

(February 9-28, 2004) [21 Days]

6. DST Sponsored SERC school on High Energy Physics

Held at– **Indian Institute of Science, Bangalore- India**

Course Contents: Introduction to String Theory; Black Hole Physics;

Advanced Gauge Theories (February 17-March 8, 1997) [20 Days]

7. DST Sponsored SERC School on High Energy Physics (1996)

Held at- **Institute of Mathematical Sciences, Chennai- India.**

Course Contents: Mathematical Physics; Quantum Field Theory;

Standard Model; General Theory of Relativity. (November 4- 30, 1997) [27 Days]

8. DST Sponsored SERC School on High Energy Physics (1996)

Held at- **Punjab University, Chandigarh (1996)**

Course Contents: Super-Symmetry; Magnetic Mono-Pole Theory; Advanced Gauge Theory. (April 1- 27, 1997) [**27 Days**]

Courses Taught

(Post) Graduate	Under Graduate
Quantum Field Theory	Mathematical Physics
Advanced Quantum Mechanics	Quantum Mechanics
Classical Mechanics	Mechanics
Classical Electrodynamics	Electromagnetism
General Theory of Relativity	Optics and Photonics

Larger Objectives

Presently, I am studying “**Geometry of Quantum Mechanics, and Gravitation and information therein**”.

I am studying and using Differential Geometry and Group theory extensively, as it is required in my explorations. I wish to explore the possibilities of **Cosmological Constant** and **Quantum Structure of Space-Time** in the Geometric Quantum Mechanics.

I want to understand the **Quantum Nature of Gravity and the Unification of Fundamental Interactions with Gravity**.

Recently, I have been appointed a member in the panel of experts by the Archaeological Survey of India (ASI) for the restoration of Jantar-Mantar Observatory at Delhi at the behest of the Honorable Supreme Court of India. We are expected to accomplish the task of restoration of Jantar-Mantar Observatory at Dehi within next one year.