



Published/Accepted Original Journal Papers

- 1 O. Trivedi (first author), A. Bidlan and P. Moniz, *Fractional Holographic Dark Energy*, Volume 858, November 2024, 139074, Physics Letters B, <https://doi.org/10.1016/j.physletb.2024.139074>
- 2 O. Trivedi (first author) and M. Khlopov, *On rips and cosmological singularities in a universe merging with baby universes*, JCAP 09 (2024) 040, <https://doi.org/10.1088/1475-7516/2024/09/040>
- 3 O. Trivedi (first author) and R.J. Scherrer, *New perspectives on future rip scenarios with holographic dark energy*, Physical Review D 110, 023521, <https://doi.org/10.1103/PhysRevD.110.023521>
- 4 I. Brevik, M. Khlopov, S. Odintsov, A.V. Timoshkin and O. Trivedi, *Rips and regular future scenarios with Holographic Dark Energy*, Eur.Phys.J.C 84 (2024) 12, 1269, <https://doi.org/10.1140/epjc/s10052-024-13601-z>
- 5 P. Bambhaniya, O. Trivedi, I. Dymnikova, P. S. Joshi, M. Khlopov, *On the interactions of black holes and cosmic strings*, Physics of the Dark Universe, 2024, 101553, <https://doi.org/10.1016/j.dark.2024.101553>
- 6 O. Trivedi (first author), M. Khlopov and A.V. Timoshkin, *Tsallis Holographic Dark Energy with Power Law Ansatz Approach*, Symmetry 2024, 16(4), 446, <https://doi.org/10.3390/sym16040446>
- 7 O. Trivedi (first author) and A.V. Timoshkin, *Little Rip, Pseudo Rip and bounce cosmology with generalized equation of state in non-standard backgrounds*, Eur.Phys.J.C 84 (2024) 3, 277, <https://doi.org/10.1140/epjc/s10052-024-12640-w>
- 8 O. Trivedi, *The exact solution approach to warm inflation*, Astropart.Phys. 158 (2024) 102951, <https://doi.org/10.1016/j.astropartphys.2024.102951>
- 9 O. Trivedi (first author), M. Khlopov, J. Said and R. Nunes, *Cosmological singularities in $f(T, \phi)$ gravity*, Eur.Phys.J.C 83 (2023) 11, 1017, <https://doi.org/10.1140/epjc/s10052-023-12204-4>
- 10 O. Trivedi (first author), S. Kaur, P.S. Joshi, *Cosmological singularities in non-canonical models of dark energy*, Physics of the Dark Universe 42 (2023) 101366, <https://doi.org/10.1016/j.dark.2023.101366>
- 11 O. Trivedi, *Another look on the connections of Hubble tension with the Heisenberg Uncertainty Principle*, Physics of the Dark Universe 39 (2023) 101150, <https://doi.org/10.1016/j.dark.2022.101150>
- 12 O. Trivedi (first author) and M. Khlopov, *Singularity formation in asymptotically safe cosmology with inhomogeneous equation of state*, JCAP 11 (2022) 007, <https://doi.org/10.1088/1475-7516/2022/11/007>
- 13 O. Trivedi, *Type V singularities with inhomogeneous equations of state*, Physics Letters B, 835 (2022) 137494, <https://doi.org/10.1016/j.physletb.2022.137494>
- 14 O. Trivedi (first author) and M. Khlopov, *On finite time singularities in scalar field dark energy models based in the RS-II Braneworld*, European Physical Journal C, 82 (2022) 800, <https://doi.org/10.1140/epjc/s10052-022-10767-2>

- 15 O. Trivedi (first author) and M. Khlopov, *Type V singularities in non-standard cosmological backgrounds*, arxiv:2202.06093, Physics of the Dark Universe. 36 (2022) 101041, <https://doi.org/10.1016/j.dark.2022.101041>
- 16 O. Trivedi, *Rejuvenating the hope of a swampland consistent inflated multiverse with tachyonic inflation in the high energy RS-II Braneworld*, Modern Physics Letters A, Vol. 37, No. 24, 2250162 (2022), <https://doi.org/10.1142/S0217732322501620>
- 17 O. Trivedi, *Lorentz violating inflation and the Swampland* (2020), arxiv:2106.03578, European Physical Journal Plus 137 (2022) 4, 507, <https://doi.org/10.1140/epjp/s13360-022-02719-2>
- 18 O. Trivedi, *Implications of single field inflation in general cosmological scenarios on the nature of dark energy given the swampland conjectures* (2020), arxiv:2011.14316, International Journal of Geometric Methods in Modern Physics, 18 (2021) 14, 2150231, <https://doi.org/10.1142/S0219887821502315>
- 19 O. Trivedi, *Swampland conjectures and single field inflation in modified cosmological scenarios*, International Journal of Modern Physics D, Vol. 32, No. 01, 2250130 (2023), <https://doi.org/10.1142/S0218271822501309>
- 20 A. Bidlan, P. Moniz and O. Trivedi, *Reconstructing FHDE with Scalar and Gauge Fields*, Eur.Phys.J.C 85 (2025) 5, 520, <https://doi.org/10.1140/epjc/s10052-025-14238-2>
- 21 O. Trivedi (first author) and A. Loeb, *Could Planck Star Remnants be Dark Matter?*, Physics of the Dark Universe, 2025,102003, <https://doi.org/10.1016/j.dark.2025.102003>.
- 22 M. Krasnov, O. Trivedi and M. Khlopov, *Kantowski-Sachs cosmological model with axion-like scalar field and dark energy*, arXiv:2410.09571, accepted for publication in Physics of Atomic Nuclei

Books Written

- 1 Oem Trivedi and Maxim Khlopov, *Quantum Gravitational Imprints on Cosmology*, World Scientific Publishing Company, <https://doi.org/10.1142/14123>, sponsored for open access by CERN.
- 2 Oem Trivedi and Maxim Khlopov, *Non-trivial Quantum Mechanics*, World Scientific Publishing Company, to be out by February 2026

Conference Proceedings Publications

- 1 O. Trivedi, *Lorentz violating inflation and the Swampland*, published in the conference proceedings for CPT'22 meeting, arXiv:2206.12619, <https://doi.org/10.1142/13383>
- 2 R. Bernabei et.al., Proceedings to the 27th Workshop "What Comes Beyond the Standard Models" Bled, July 8-17, 2024 , <https://doi.org/10.51746/9789612974848>

Editorial Works

- 1 Guest editor for the special issue on "Quantum Gravity and Cosmology: Exploring the As-troparticle Interface," alongside Maxim Khlopov and Iver Brevik, for the *Symmetry* journal., <https://www.mdpi.com/si/208888>

Research Papers Undergoing Review

- 1 O. Trivedi(first author) and A. Loeb, *On the Cosmological Constant-Graviton Mass correspondence* ,arXiv:2411.12757
- 2 S.Blitz, R.J.Scherrer and O. Trivedi, *A long freeze is hard to achieve in the presence of matter* ,arXiv:2411.16344
- 3 O. Trivedi, *Universality of Information Thermodynamics and the Efficiency of Information Erasure on the Cosmological Apparent Horizon*, arXiv:2407.15231

- 4 O. Trivedi(first author) and R.J. Scherrer, *The long freeze: an asymptotically static universe from holographic dark energy*, arXiv:2409.11420
- 5 O. Trivedi (first author) and M. Khlopov, *Holographic dark energy with Granda-Oliveros cutoff and ansatz based approach: An extended look*, arXiv:2405.15798
- 6 J. Novak and O. Trivedi, *The old problem of the cosmological constant solved?*, arXiv:2505.22553
- 7 O. Trivedi (first author), M. Mishra and A. Ganesan, *Cosmological Frequency Combs*, arXiv:2507.01929

Invited review articles

- 1 O. Trivedi, Recent advances in cosmological singularities, *Symmetry* 16 (2024) 3, 298 (invited by Prof. Sergei Odintsov for writing this paper), <https://doi.org/10.3390/sym16030298>
- 2 O. Trivedi, Quantum gravity in the skies?, *Astronomy & Geophysics*, Volume 65, Issue 5, October 2024, Pages 5.20–5.27, <https://doi.org/10.1093/astrogeo/atae055>

White Paper Authorships

- 1 Author on the *The Wide-field Spectroscopic Telescope (WST) Science White Paper*, arXiv:2403.05398
- 2 Author on the *Roman Galactic Plane Survey White paper*, arXiv:2406.14767
- 3 Author on the COST Action *Cosmoverse* white paper, arXiv:2504.01669

Refereed for journals

- 1 *Frontiers in Space Science and Astronomy*
- 2 *International Journal of Modern Physics D*
- 3 *Physics of the Dark Universe*
- 4 *International Journal of Astronomy and Astrophysics*
- 5 *International Journal of Geometric Methods in Modern Physics*
- 6 *Reports on Mathematical Physics*
- 7 *Nuclear Physics B*
- 8 *Journal of High Energy Astrophysics*
- 9 *Astroparticle Physics*
- 10 *European Physical Journal C*
- 11 *Open Astronomy*
- 12 *Physics Letters B*
- 13 *Foundations of Physics*

Courses taught

- 1 One of the instructors for the PhD course "Introduction to Cosmoparticle Physics" at the Moscow Institute for Engineering and Physics (MEPHI) for 2025, course link

Conference Talks

- 1 On the Trans-Planckian Censorship Conjecture and Constant Roll Inflation, Russian Gravitational Conference, Peter the Great St. Petersburg University, 2020, was the youngest speaker.
- 2 On the Swampland Conjectures and Single Field Inflation in General Cosmological Scenarios, Cosmology from Home, 2020, was the youngest speaker, was given full fee waiver.
- 3 On the Exact Solution Approach to Warm Inflation, Korean Institute of Advanced Studies Workshop on Cosmology and Structure Formation, 2020, was the youngest speaker.

- 4 On Rejuvenating the Hope of a Swampland Consistent Inflated Multiverse with Tachyonic Inflation in the High Energy RS-II Braneworld, British Gravitational Conference, University College Dublin, 2021, was the youngest speaker.
- 5 On the Swampland Conjectures and Single Field Inflation in Modified Cosmological Scenarios, 14th International Workshop on the Interconnections Between Particle Physics and Cosmology, University of Oklahoma, was the youngest speaker.
- 6 On Rejuvenating the Hope of a Swampland Consistent Inflated Multiverse with Tachyonic Inflation in the High Energy RS-II Braneworld, poster talk, Strings 2021, was the youngest speaker.
- 7 On Lorentz Violating Inflation and the Swampland, Cosmo'21, Poster Talk, 2021, was the youngest speaker, admitted on a student fellowship from the University of Illinois at Urbana-Champaign.
- 8 On the Swampland Conjectures and Single Field Inflation in Modified Cosmological Scenarios, Strings and Fields Conference, Yukawa Institute of Theoretical Physics, 2021, was the youngest speaker.
- 9 On the Swampland Conjectures and Single Field Inflation in Modified Cosmological Scenarios, Brookhaven Forum, Brookhaven National Laboratory, 2021, was the youngest speaker
- 10 On Type V Singularities in Non-Standard Cosmological Backgrounds, Atlantic General Relativity Meeting 2022, was the youngest speaker.
- 11 On Lorentz Violating Inflation and the Swampland, CPT Meeting 2022, Indiana University Bloomington.
- 12 On Cosmological Singularities in Non-Standard Scenarios, poster talk at the 3rd EuCAPT Symposium, CERN.
- 13 On Cosmological Singularities in Exotic Backgrounds, talk at the APS April Meeting 2023.
- 14 On Cosmological Singularities in Non-Standard Backgrounds, poster talk at the 2023 EuCAPT Symposium at CERN.

Invited Seminar Talks

- 1 Gave a talk in the "Mathematical and Physical Sciences" divisional seminar series at Ahmedabad University.
- 2 Gave a talk in the "Majorana Raychaudhuri" seminar series on March 17th 2023, <https://sites.google.com/view/joint-seminars-salerno-kolkata/home>.
- 3 Gave a seminar for the LSST DESC collaboration's Beyond Lambda CDM group, 7th June 2023.
- 4 Gave a seminar for the LSST DESC Collaboration's Beyond Lambda CDM group, 1st May 2024.

International Scientific Collaborations

- 1 Member of the Cosmic Explorer Consortium: 2022-Present.
- 2 Member of the LSST Dark Energy Science Collaboration (DESC): 2022 – Present.
- 3 Member of the Wide Field Spectroscopic Telescope (WST) science team: 2023- Present.
- 4 Member of the COST Action Cosmoverse collaboration: 2023-present.
- 5 Member of the Southeastern European Network for Mathematical and Theoretical Physics (SEENET-MTP) : 2024- present.

Grants Awarded

- 1 Awarded a travel grant by the American Physical Society to attend the APS April Meeting 2023.

Honors

- 1 Fellow of the Royal Astronomical Society: 2022-Present (youngest ever from Madhya Pradesh, only currently active fellow from the state and currently the youngest fellow in the world).

- 2 Member of the American Physical Society: 2022-Present.
- 3 Conferred as the "Pride of Indore" by the honorable Member of Parliament from the constituency of Indore.
- 4 Conferred as the "Pride of MP" by the state government of Madhya Pradesh, India.
- 5 Invited as a distinguished speaker by IIT Indore to give a talk in their "Rashtriya Avishkaar Abhiyaan Series", <https://www.youtube.com/watch?v=3X5WVR00tUc&t=1618s>.
- 6 InRes Young Scientist Award, 2022.
- 7 Young achiever award 2022, awarded by the Indian Achiever's forum.
- 8 Holds the record for the "Highest number of technical research talks given by an Asian undergraduate student in international research conferences", recognized by the India Book of Records.
- 9 Invited as a speaker to the National Youth Science Camp 22, the first ever Indian student to have had received the opportunity.
- 10 Invited as a plenary speaker at the 2021 Logicae Science Summer Program.
- 11 Invited as a plenary speaker at the 2020 Africa Science Buskers Festival, <https://www.youtube.com/watch?v=3X5WVR00tUc&t=1618s>.
- 12 Represented India at the 2019 London International Youth Science Forum at Imperial College London.

Media Appearances

- 1 The Long Freeze has been subject of a huge amount of media coverage, some of the news articles and alongside some videos from prominent social media channels are here as follows
 - <https://www.wionews.com/trending/universe-might-die-in-a-long-freeze-when-everything-halts-and-withers-away-770332>
 - <https://www.popularmechanics.com/space/deep-space/a62684775/dark-matter-long-freeze/>
 - <https://www.thebrighterside.news/post/from-big-bang-to-long-freeze-scientist-propose-surprising-end-to-the-universe/>
 - <https://www.livescience.com/physics-mathematics/dark-energy/the-universe-may-end-in-a-big-freeze-holographic-model-of-the-universe-suggests>
 - <https://www.express.co.uk/news/science/1965086/end-of-world-warning-dark-energy-big-freeze>
 - <https://www.indy100.com/science-tech/long-freeze-end-of-universe>
 - <https://www.good.is/scientists-find-holographic-dark-energy-that-could-end-the-universe-and-it-isnt-how-anyone-anticipated>
 - <https://www.freeastroscience.com/2024/10/the-universes-final-freeze-holographic.html?m=1>
 - <https://www.iflscience.com/how-holographic-dark-energy-could-lead-to-the-end-of-the-universe-76467>
 - <https://brobible.com/culture/article/scientists-how-world-will-end/>
 - <https://www.chipchick.com/2024/10/new-research-suggests-holographic-dark-energy-could-halt-the-expansion-of-the-universe-and-cause-a-long-freeze-in-which-all-stars-wink-out-and-die>
 - <https://dailystar.com.lb/universe-end-freeze-everything-slowly-withers-away/>
 - <https://trustmyscience.com/long-freeze-pourrait-marquer-fin-univers-modele-holographique-energie-sombre/>
 - <https://infa.lt/114361/visatos-zuties-scenarijus-palaipsniui-viskas-sustos-uzges-ir-atves/>
 - <https://www.instagram.com/reel/DCFWOo-pNLI/?igsh=YXZ5OHlzYzY0Mnp0>
 - <https://www.instagram.com/hashem.alghaili/reel/DB9itVasfkO/?locale=id&hl=af>
 - <https://www.youtube.com/watch?v=aV0bwBm20vw>

- 2 Planck Star Remnants will be the feature article for the French popular science journal Ciel and Espace for September
- 3 Gave a full length interview on my life in physics so far to Samay Now news channel, the interview was also uploaded to Youtube by them.
- 4 Gave TV interviews to various news channels in the Indian state of Madhya Pradesh in September 2023, on the occasion of being invited to Jan Ashirvaad Yatra as the Pride of MP.
- 5 Was interviewed by media website "Leader's story" about my journey in science so far.
- 6 Was interviewed by Hindi weekly newspaper Jawabdehi on my work in cosmology, interview published in the newspaper for the weekly edition 19th -25th September, 2022.
- 7 Was interviewed by Hindi media house Dainik Bhaskar on my work in cosmology, interview published in Dainik Bhaskar newspaper dated 11th September 2022.
- 8 Interview was posted on Bhaskar's digital version(<https://www.bhaskar.com/local/mp/indore/news/how-black-hole-swallows-stars-will-do-research-in-california-in-30-km-1.html>) as well and was broadcasted on Bhaskar TV news channel
- 9 Was interviewed by Hindi daily newspaper Hindustan Mail on my work in cosmology, interview published in the newspaper dated 5th September 2022.
- 10 Was interviewed by Hindi daily newspaper Prajaatantra on my selection as a speaker at the NYS Camp, interview published in the newspaper dated 3rd July 2022.

Academic-Non Academic Information

- 1 Physics PhD Student at Vanderbilt University funded by the Discovery Doctoral Fellowship
- 2 Over 300 citations on research works, an h-index of 9
- 3 Attended the IUCSS Summer School and Workshop on Lorentz- and CPT-violating Standard Model extension hosted by Indiana University Bloomington, 2021.
- 4 Attended the COST CA 18108 First training school on Quantum Gravity Phenomenology in the Multi-Messenger Approach hosted by the CORFU Summer Institute, Greece.
- 5 Very fluent in computational methods in Python, Mathematica and MATLAB for uses in Physics, particularly in Cosmology.
- 6 Nationality: Indian