Anosh Joseph

Senior Lecturer in Theoretical Physics
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Twitter: twitter.com/anoshjoseph
Skype: anoshjoseph

Research Interests

Theoretical High Energy Physics, Quantum Field Theory, Lattice Field Theory, Computational Physics.

Professional Experience

UNIVERSITY OF THE WITWATERSRAND
School of Physics,
Senior Lecturer, 2023-Present

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER) - MOHALI
Department of Physical Sciences,
Assistant Professor, 2018-2023

TATA INSTITUTE OF FUNDAMENTAL RESEARCH (TIFR)
International Centre for Theoretical Sciences (ICTS)
Research Fellow, 2016-2018

UNIVERSITY OF CAMBRIDGE
Department of Applied Mathematics and Theoretical Physics (DAMTP)
Research Associate, 2015-2016

DEUTSCHES ELEKTRONEN-SYNCHROTRON (DESY)
John von Neumann Institute for Computing (NIC)
Research Fellow, 2013-2015

LOS ALAMOS NATIONAL LABORATORY (LANL)
Theoretical Division
Research Associate, 2011-2013

SYRACUSE UNIVERSITY
Department of Physics
Graduate Research Assistant/Teaching Assistant, 2005-2011

Educational Background

SYRACUSE UNIVERSITY, Syracuse, New York, USA,
Ph.D. in Physics, 2011
Dissertation: *Supersymmetric Yang-Mills Theories on the Lattice*

Educational Background (Cont'd)

INDIAN INSTITUTE OF TECHNOLOGY - MADRAS (IIT - MADRAS), Chennai, INDIA,
M.Sc. in Physics, 2004
Thesis: *Large-N Matrix Models*
Gold Medalist (Class of 2004)

MAHATMA GANDHI UNIVERSITY, Kerala, INDIA,
B.Sc. in Physics, 2001
University First Rank Holder

Recent Research Grants

NRF International Mobility Task (South Africa / South Korea) (2023 - 2024),
PIs: Anosh Joseph and Junggi Yoon

Wits Start-Up Research Grant (2023 - 2025),
PI: Anosh Joseph

DiRAC computing allocation, STFC-UKRI (2022 - 2023), 24M core-hours,
Lattice studies of 3d super-Yang–Mills and holography,
PI: David Schaich, Co-PIs: Raghav G. Jha, Anosh Joseph, Angel Sherletov, and Toby Wiseman

Start-Up Research Grant, Science and Engineering Research Board (SERB), Government of India, (2019 - 2021),
Lattice Supersymmetry and Holography,
PI: Anosh Joseph

Organizational Services

Co-organizer,
"The Sixth Mandelstam Theoretical Physics School and Workshop 2024 - Recent Developments in Large N, Holography, and Complexity," University of the Witwatersrand, Johannesburg, SOUTH AFRICA (January 9-16, 2024)

Co-organizer,
"Numerical Methods in Theoretical Physics," Asia Pacific Center for Theoretical Physics (APCTP), Pohang, SOUTH KOREA (July 9-14, 2023)

Co-organizer,
"The 25th DAE-BRNS High Energy Physics (HEP) Symposium," IISER Mohali, Mohali, INDIA (December 12 - 16, 2022)

Co-organizer,
"Nonperturbative and Numerical Approaches to Quantum Gravity, String Theory, and Holography," ICTS-TIFR, Bangalore, INDIA (August 22 - September 2, 2022)

Co-organizer,
(Hybrid) "Numerical Methods in Theoretical Physics," Asia Pacific Center for Theoretical Physics (APCTP), Pohang, SOUTH KOREA (May 15-21, 2022)

Co-organizer,
"(Hybrid) Shivalik HEPCATS Meeting: Winter 2021," IISER Mohali, Mohali, INDIA (December 18, 2021)

Co-organizer,
"(Virtual) Shivalik HEPCATS Meeting: Winter 2020," IISER Mohali, Mohali, INDIA (January 30, 2021)

Co-organizer,
"(Virtual) Nonperturbative and Numerical Approaches to Quantum Gravity, String Theory, and Holography," ICTS-TIFR, Bangalore, INDIA (January 18-22, 2021)

Co-organizer,
"(Virtual) Shivalik HEPCATS Meeting: Summer 2020," IISER Mohali, Mohali, INDIA (July 20-21, 2020)

Co-organizer,
"Shivalik HEPCATS Meeting: Winter 2019," IISER Mohali, Mohali, INDIA (December 7, 2019)

Co-organizer,
"Nonperturbative and Numerical Approaches to Quantum Gravity, String Theory, and Holography," ICTS-TIFR, Bangalore, INDIA (January 27 - February 3, 2018)

Organizer,
Joint seminar series on "Field Theory on the Lattice and Phenomenology of Elementary Particles," at DESY, Zeuthen and The Humboldt University of Berlin, Berlin, GERMANY (Sep 2014 - Aug 2015)

Coordinator,
Joint High Energy Theory/Relativity/Cosmology Seminar Series at the Department of Physics, Syracuse University, Syracuse, NY, USA (Aug 2007 - Aug 2008)

Academic Service

Member, School of Physics Research Strategy Working Group, University of the Witwatersrand, Johannesburg, South Africa (2023)

Member, Institute Library Committee, IISER Mohali, India (2019 - 2022, 2022 - 2023)

Convener, Integrated PhD in Physics Admissions Committee, IISER Mohali, India (2020, 2021)

Convener, Election Committee of Student Representative Council, IISER Mohali, India (2021)

Member, Physics Minor Program Committee, IISER Mohali, India (2020 - 2022)

Member, Physics Department Webpage Development Committee, IISER Mohali, India (2020 - 2023)

Member, Election Committee of Student Representative Council, IISER Mohali, India (2020)

University Teaching

UNIVERSITY OF THE WITWATERSRAND,
School of Physics,
Johannesburg, SOUTH AFRICA (July 2023 - Present).

Instructor

2023 Second Term: PHYS4028 - Introduction to Quantum Field Theory (Enrollment: 8)

IISER MOHALI,
Department of Physical Sciences,
Mohali, Punjab, INDIA (Aug 2018 - June 2023)

Instructor

2022 Monsoon: PHY 424 - Relativistic Quantum Mechanics and Quantum Field Theory (Credits: 4, Enrollment: 21)
2022 Spring: PHY 304 - Statistical Mechanics (Credits: 4, Enrollment: 59)
2021 Monsoon: PHY 635 - Gravitation and Cosmology (Credits: 4, Enrollment: 29)
2021 Spring: PHY 304 - Statistical Mechanics (Credits: 4, Enrollment: 76)
2020 Monsoon: PHY 401 - Nuclear and Particle Physics (Credits: 4, Enrollment: 72)
2020 Spring: PHY 646 - Quantum Field Theory II (Credits: 4, Enrollment: 14)
2019 Monsoon: PHY 310 - Mathematical Methods for Physicists I (Credits: 4, Enrollment: 74)
2019 Spring: PHY 422 - Computational Methods in Physics I (Credits: 4, Enrollment: 50)

Tutor

2020 Spring: PHY 102 - Electricity and Magnetism
2019 Spring: PHY 202 - Heat and Thermodynamics

Co-Instructor

2018 Monsoon: PHY 411 - Nuclear Physics Laboratory

Coordinator

2020 Spring: IDC 451 - Seminar Course (Delivery)
2018 Monsoon: IDC 351 - Seminar Course (Attending)
2018 Monsoon: IDC 451 - Seminar Course (Delivery)
2018 Monsoon: IDC 601 - Seminar Course (Delivery)

THE HUMBOLDT UNIVERSITY OF BERLIN,
Department of Physics,
Berlin, GERMANY (Apr 2014 - Jul 2014).

Teaching Assistant

2014 Summer: 40507 - Introduction to Lattice Field Theory

SYRACUSE UNIVERSITY,
Department of Physics,
Syracuse, NY, USA (Aug 2005 - May 2011)

Instructor

2007 Summer: PHY 212 - General Physics II (Electricity, Magnetism and Light)

Teaching Assistant

2011 Spring: AST 104 - Stars, Galaxies and the Universe
2010 Fall: AST 101 - Our Corner of the Universe
2010 Spring: AST 104 - Stars, Galaxies and the Universe
2009 Fall: AST 101 - Our Corner of the Universe
2008 Fall: PHY 101 - Major Concepts of Physics I
2008 Spring: PHY 102 - Major Concepts of Physics II
2007 Spring: PHY 102 - Major Concepts of Physics II

2006 Fall: PHY 212 - General Physics II (Electricity, Magnetism and Light)
2006 Spring: PHY 221 - General Physics Laboratory I (Mechanics)
2005 Fall: PHY 212 - General Physics II (Electricity, Magnetism and Light)

Course Grader

2008 Fall: PHY 880 - Group Theory for Physicists
2008 Spring: PHY 641 - Advanced Electromagnetic Theory I
2007 Fall: PHY 661 - Quantum Mechanics I
2007 Spring: PHY 662 - Quantum Mechanics II

Physics Lectures

3. Lectures on *Holography from the Lattice*,
   2023 Joburg School in Theoretical Physics: Recent Developments in String Theory,
   Mandelstam Institute for Theoretical Physics,
   The University of the Witwatersrand,
   Johannesburg, SOUTH AFRICA (October 23 - 27, 202)

2. Lectures on *Markov Chain Monte Carlo Methods in Quantum Field Theories*,
   2019 Joburg School in Theoretical Physics: Aspects of Machine Learning,
   Mandelstam Institute for Theoretical Physics,
   The University of the Witwatersrand,
   Johannesburg, SOUTH AFRICA (November 11 - 15, 2019)

1. Lectures on the *Standard Model of Elementary Particle Physics*,
   Winter Workshop on Particle Phenomenology,
   Thapar Institute of Engineering and Technology,
   Patiala, Punjab, INDIA (January 2-6, 2019)

Supervision and Advising

Post-Doctoral Scholar Supervision

1. Minati Biswal (2020 - 2022)

Doctoral Scholar Supervision - Completed

1. Arpith Kumar (2018 - 2023)
   - PhD Thesis Title: *Non-perturbative Simulations of Quantum Field Theories using Complex Langevin Dynamics*
   - Current Status: Pursuing Post-doctoral Research in Physics at Central China Normal University, China

2. Navdeep Singh Dhindsa (2018 - 2023)
   - PhD Thesis Title: *Non-perturbative Studies of Non-conformal Field Theories*
   - Current Status: Pursuing Post-doctoral Research in Physics at the Institute of Mathematical Sciences, India

Doctoral Scholar Supervision - Ongoing

1. Vamika Longia (2019 -)
   – PhD Thesis Topic: *Tensor Network Methods for Quantum Field Theories*

2. Bana Singh Sangtan (2019 -)
   – PhD Thesis Topic: *Supersymmetric Quantum Field Theories on a Lattice*

Master's Student Supervision

1. Ashutosh Tripathi (2020 - 2021)
   – Master's Thesis Title: *Non-lattice Simulations of Supersymmetric Yang-Mills Theories*
   – Current Status: Pursuing PhD in Physics at the Graduate University for Advanced Studies, SOKENDAI, Japan

2. Gaurav Dadwal (2020 - 2021)
   – Master's Thesis Title: *Complex Langevin Method and Its Validity in Removing the Sign Problem*
   – Current Status: Pursuing PhD in Physics at the University of Alabama, USA

3. Piyush Kumar (2020 - 2021)
   – Master's Thesis Title: *Investigating Spontaneous Symmetry Breaking in IKKT Matrix Model*
   – Current Status: Pursuing PhD in Physics at the University of Wuppertal, Germany

4. Raunok Basu (2020 - 2021)
   – Master's Thesis Title: *Computation of Wilson Loops and Verifying Phase Transition in Bosonic BFSS*
   – Current Status: Pursuing MBA in General Management at Indian Institute of Management (IIM), Udaipur, India

5. Nikhil Tanwar (2019 - 2020)
   – Master's Thesis Title: *Monte Carlo Simulations of BFSS and IKKT Matrix Models*
   – Current Status: Pursuing PhD in Theoretical Physics at the Tata Institute of Fundamental Research (TIFR), Mumbai, India

6. Adeeb Mev (2019 - 2020)
   – Master's Thesis Title: *Simulations of Bosonic BMN Matrix Model*

List of Publications

Book

1. *Markov Chain Monte Carlo Methods in Quantum Field Theories: A Modern Primer,*
   Author: Anosh Joseph,
   Publisher: Springer Nature (2020),
   ISBN: 978-3-030-46043-3 (Softcover), 978-3-030-46044-0 (eBook),
   DOI: https://doi.org/10.1007/978-3-030-46044-0,
   Physics ArXiv E-print: arXiv:1912.10997 [hep-th].

Preprints

1. *Phase diagram of two-dimensional SU(N) super-Yang–Mills theory with four supercharges,*
   Authors: Navdeep Singh Dhindsa, Raghav G. Jha, Anosh Joseph, and David Schaich,
   Physics ArXiv E-print: arXiv: 2312.04980 [hep-lat].

Publications in Peer-reviewed Journals

35 Publications in peer-reviewed journals (over 1250 citations, h-index: 20). For additional metrics see my publication profile on Google Scholar. (Theoretical High Energy Physics/Particle Physics convention: Authors in alphabetical order.)

35. *Lattice Supersymmetry and Holography,*
    Author: Anosh Joseph,
    Publisher: The European Physical Journal Special Topics (2023),
    DOI: https://doi.org/10.1140/epjs/s11734-023-00772-1,
    Physics ArXiv E-print: arXiv:2302.04559 [hep-lat].
34. *Probing Non-perturbative Supersymmetry Breaking through Lattice Path Integrals,*
    Authors: Navdeep Singh Dhindsa, and Anosh Joseph,
    Published in: The European Physical Journal Plus, Vol. 137, No. 1155 (2022),
    DOI: https://doi.org/10.1140/epjp/s13360-022-03389-w,
    Physics ArXiv E-print: arXiv: 2011.0819 [hep-lat].
33. *Non-perturbative phase structure of the bosonic BMN matrix model,*
    Authors: Navdeep Singh Dhindsa, Raghav G. Jha, Anosh Joseph, Abhishek Samlodia, and David Schaich,
    Published in: Journal of High Energy physics **05** (2022) 169,
    DOI: https://doi.org/10.1007/JHEP05(2022)169,
    Physics ArXiv E-print: arXiv: 2201.08791 [hep-lat].
32. *Complex Langevin Dynamics and Supersymmetric Quantum Mechanics,*
    Authors: Anosh Joseph and Arpith Kumar,
    Published in: Journal of High Energy physics **10** (2021) 186,
    DOI: https://doi.org/10.1007/JHEP10(2021)186,
    Physics ArXiv E-print: arXiv: 2001.08107 [hep-lat].
31. *Lefschetz Thimbles and Quantum Phases in Zero-Dimensional Bosonic Models,*
    Authors: R. Bharathkumar and Anosh Joseph,
    Published in: The European Physical Journal C **80** (2020) 10, 923,
    DOI: https://doi.org/10.1140/epjc/s10052-020-08493-8,
    Physics ArXiv E-print: arXiv: 2001.10486 [hep-th].
30. *Complex Langevin Simulations of Zero-dimensional Supersymmetric Quantum Field Theories,*
    Authors: Anosh Joseph and Arpith Kumar,
    Published in: Physical Review D **100**, 074507 (2019),
    DOI: https://doi.org/10.1103/PhysRevD.100.074507,
    Physics ArXiv E-print: arXiv:1908.04143 [hep-th].
29. *Complex Langevin Dynamics in Large N Unitary Matrix Models,*
    Authors: Pallab Basu, Kasi Jaswin and Anosh Joseph,
    Published in: Physical Review D **98**, 034501 (2018),
    DOI: https://doi.org/10.1103/PhysRevD.98.034501,
    Physics ArXiv E-print: arXiv:1802.10381 [hep-lat].

28. *Lattice Formulation of $\mathcal{N} = 2^*$ Yang-Mills,*
Author: Anosh Joseph,
Published in: Physical Review D **97**, 094508 (2018),
DOI: https://doi.org/10.1103/PhysRevD.97.094508,
Physics ArXiv E-print: arXiv:1710.10172 [hep-lat].

27. *Abelian Tensor Models on the Lattice,*
Authors: S. Chaudhuri, Victor I. Giraldo-Rivera, Anosh Joseph, R. Loganayagam, Junggi Yoon,
Published in: Physical Review D **97**, 086007 (2018),
DOI: https://doi.org/10.1103/PhysRevD.97.086007,
Physics ArXiv E-print: arXiv:1705.01930 [hep-th].

26. *Nonperturbative Study of Dynamical SUSY Breaking in $\mathcal{N} = (2, 2)$ Yang-Mills,*
Authors: Simon Catterall, Raghav G. Jha and Anosh Joseph,
Published in: Physical Review D **97**, no. 5, 054504 (2018),
DOI: https://doi.org/10.1103/PhysRevD.97.054504,
Physics ArXiv E-print: arXiv:1801.00012 [hep-lat].

25. *A Euclidean Lattice Formulation of D=5 Maximally Supersymmetric Yang-Mills Theory,*
Author: Anosh Joseph,
Published in: Journal of High Energy Physics **1606** (2016) 030,
DOI: https://doi.org/10.1007/JHEP06(2016)030,
Physics ArXiv E-print: arXiv:1604.02707 [hep-lat].

24. *Continuum limit of the leading order HQET form factor in $B_s \to K\ell\nu$ decays,*
Authors: Felix Bahr, Debasish Banerjee, Fabio Bernardoni, Anosh Joseph, Mateusz Koren, Hubert Simma and Rainer Sommer
Published in: Physics Letters **B757** (2016) 473-479,
DOI: https://doi.org/10.1016/j.physletb.2016.03.088,
Physics ArXiv E-print: arXiv:1601.04277 [hep-lat].

23. *Review of Lattice Supersymmetry and Gauge-Gravity Duality,*
Author: Anosh Joseph,
Published in: International Journal of Modern Physics A **30** , no. 27, (2015) 1530054,
DOI: https://doi.org/10.1142/S0217751X15300549,
Physics ArXiv E-print: arXiv:1509.01440 [hep-th].

22. *Iso-vector and Iso-scalar Tensor Charges of the Nucleon from Lattice QCD,*
Authors: Tanmoy Bhattacharya, Vincenzo Cirigliano, Saul D Cohen, Rajan Gupta, Anosh Joseph, Huey-Wen Lin and Boram Yoon,
Published in: Physical Review D **92**, no. 9, 094511 (2015),
DOI: https://doi.org/10.1103/PhysRevD.92.094511,
Physics ArXiv E-print: arXiv:1506.06411 [hep-lat].

21. *Two-dimensional $\mathcal{N} = (2, 2)$ Lattice Gauge Theories with Matter in Higher Representations,*
Author: Anosh Joseph,
Published in: Journal of High Energy Physics **1407** (2014) 067,
DOI: https://doi.org/10.1007/JHEP07(2014)067,
Physics ArXiv E-print: arXiv:1403.4390 [hep-lat].

20. *Nucleon Charges and Electromagnetic Form Factors from 2+1+1-Flavor Lattice QCD,*
Authors: Tanmoy Bhattacharya, Saul D Cohen, Rajan Gupta, Anosh Joseph, Huey-Wen Lin and Boram Yoon,
Published in: Physical Review D **89**, 094502 (2014),
DOI: https://doi.org/10.1103/PhysRevD.89.094502,
Physics ArXiv E-print: arXiv:1306.5435 [hep-lat].

19. *Supersymmetric Quiver Gauge Theories on the Lattice,*
Author: Anosh Joseph,
Published in: Journal of High Energy Physics **1401** (2014) 093,
DOI: https://doi.org/10.1007/JHEP01(2014)093,
Physics ArXiv E-print: arXiv:1311.5111 [hep-lat].
18. *Lattice Formulation of Three-dimensional $\mathcal{N} = 4$ Gauge Theory with Fundamental Matter Fields,*
Author: Anosh Joseph,
Published in: Journal of High Energy Physics **09** (2013) 046,
DOI: https://doi.org/10.1007/JHEP09(2013)046,
Physics ArXiv E-print: arXiv:1307.3281 [hep-lat].
17. *Twisted Supersymmetries in Lattice $\mathcal{N} = 4$ Super Yang-Mills Theory,*
Authors: Simon Catterall, Joel Giedt and Anosh Joseph,
Published in: Journal of High Energy Physics **1310** (2013) 166,
DOI: https://doi.org/10.1007/JHEP10(2013)166,
Physics ArXiv E-print: arXiv:1306.3891 [hep-lat].
16. *On the Sign Problem in 2D Lattice Super Yang–Mills,*
Authors: Simon Catterall, Richard Galvez, Anosh Joseph and Dhagash Mehta,
Published in: Journal of High Energy Physics **1201** (2012) 108,
DOI: https://doi.org/10.1007/JHEP01(2012)108,
Physics ArXiv E-print: arXiv:1112.3588 [hep-lat].
15. *Supersymmetric Yang–Mills Theories with Exact Supersymmetry on the Lattice,*
Author: Anosh Joseph,
Published in: International Journal of Modern Physics A **26**, 5057 (2011),
DOI: https://doi.org/10.1142/S0217751X11054863,
Physics ArXiv E-print: arXiv:1110.5983 [hep-lat].
14. *An Object Oriented Code for Simulating Supersymmetric Yang–Mills Theories,*
Authors: Simon Catterall and Anosh Joseph,
Published in: Computer Physics Communications **183**, 1336 (2012),
DOI: https://doi.org/10.1016/j.cpc.2012.01.024,
Physics ArXiv E-print: arXiv:1108.1503 [hep-lat].
13. *Perturbative Renormalization of Lattice $\mathcal{N} = 4$ Super Yang–Mills Theory,*
Authors: Simon Catterall, Eric Dzienkowski, Joel Giedt, Anosh Joseph and Robert Wells,
Published in: Journal of High Energy Physics **1104** (2011) 074,
DOI: https://doi.org/10.1007/JHEP04(2011)074,
Physics ArXiv E-print: arXiv:1102.1725 [hep-th].
12. *Thermal Phases of D1-branes on a Circle from Lattice Super Yang–Mills,*
Authors: Simon Catterall, Anosh Joseph and Toby Wiseman,
Published in: Journal of High Energy Physics **1012** (2010) 022,
DOI: https://doi.org/10.1007/JHEP12(2010)022,
Physics ArXiv E-print: arXiv:1008.4964 [hep-th].
11. *Non-Pauli Transitions from Spacetime Noncommutativity,*
Authors: A. P. Balachandran, Anosh Joseph and Pramod Padmanabhan,
Published in: Physical Review Letters **105**, 051601 (2010),
DOI: https://doi.org/10.1103/PhysRevLett.105.051601,
Physics ArXiv E-print: arXiv:1003.2250 [hep-th].
10. *Vortex Scattering and Intercommuting Cosmic Strings on a Noncommutative Spacetime,*
Authors: Anosh Joseph and Mark Trodden,
Published in: Physical Review D **81**, 043536 (2010),
DOI: https://doi.org/10.1103/PhysRevD.81.043536,
Physics ArXiv E-print: arXiv:0911.4668 [hep-ph].

9. *Topological Dark Matter in Little Higgs Models,*
Authors: Anosh Joseph and S. G. Rajeev,
Physical Review D **80**, 074009 (2009),
DOI: https://doi.org/10.1103/PhysRevD.80.074009,
Physics ArXiv E-print: arXiv:0905.2772 [hep-ph].
8. *Causality and Statistics on the Groenewold–Moyal Plane,*
Authors: A. P. Balachandran, Anosh Joseph and Pramod Padmanabhan,
Published in: Foundations of Physics **40**, 692 (2010),
DOI: https://doi.org/10.1007/s10701-009-9335-4,
Physics ArXiv E-print: arXiv:0905.0876 [hep-th].
7. *Particle Phenomenology on Noncommutative Spacetime,*
Author: Anosh Joseph,
Published in: Physical Review D **79**, 096004 (2009),
DOI: https://doi.org/10.1103/PhysRevD.79.096004,
Physics ArXiv E-print: arXiv:0811.3972 [hep-ph].
6. *Hamilton–Jacobi Formalism for String Gas Thermodynamics,*
Authors: Anosh Joseph and S. G. Rajeev,
Published in: Physical Review D **79**, 063525 (2009),
DOI: https://doi.org/10.1103/PhysRevD.79.063525,
Physics ArXiv E-print: arXiv:0807.3957 [hep-th].
5. *Constraints from CMB on Spacetime Noncommutativity and Causality Violation,*
Authors: Earnest Akofor, A. P. Balachandran, Anosh Joseph, Larne Pekowsky and Babar A. Qureshi,
Published in: Physical Review D **79**, 063004 (2009),
DOI: https://doi.org/10.1103/PhysRevD.79.063004,
Physics ArXiv E-print: arXiv:0806.2458 [astro-ph].
4. *Quantum Fields on the Groenewold–Moyal Plane,*
Authors: Earnest Akofor, A. P. Balachandran and Anosh Joseph,
Published in: International Journal of Modern Physics A **23**, 1637 (2008),
DOI: https://doi.org/10.1142/S0217751X08040317,
Physics ArXiv E-print: arXiv:0803.4351 [hep-th].
3. *Lattice Actions for Yang–Mills Quantum Mechanics with Exact Supersymmetry,*
Authors: Simon Catterall and Anosh Joseph,
Published in: Physical Review D **77**, 094504 (2008),
DOI: https://doi.org/10.1103/PhysRevD.77.094504,
Physics ArXiv E-print: arXiv:0712.3074 [hep-lat].
2. *Direction-dependent CMB Power Spectrum and Statistical Anisotropy from Noncommutative Geometry,*
Authors: Earnest Akofor, A. P. Balachandran, Sang G. Jo, Anosh Joseph and Babar A. Qureshi,
Published in: Journal of High Energy Physics **0805** (2008) 092,
DOI: https://doi.org/10.1088/1126-6708/2008/05/092,
Physics ArXiv E-print: arXiv:0710.5897 [astro-ph].
1. *Quantum Fields on the Groenewold–Moyal plane: C, P, T and CPT,*
Authors: Earnest Akofor, A. P. Balachandran, Sang G. Jo and Anosh Joseph,
Published in: Journal of High Energy Physics **0708** (2007) 045,
DOI: https://doi.org/10.1088/1126-6708/2007/08/045,
Physics ArXiv E-print: arXiv:0706.1259 [hep-th].

Conference Proceedings

22. *Deconfinement Phase Transition in Bosonic BMN Model at General Coupling,*
Authors: Navdeep Singh Dhindsa, Anosh Joseph, Abhishek Samlodia, and David Schaich,
Published in: TBA,
DOI: TBA,
Physics ArXiv E-print: arXiv: 2308.02538 [hep-lat].
21. *Investigating Spontaneous SO(10) Symmetry Breaking in Type IIB Matrix Model,*
Authors: Arpith Kumar, Anosh Joseph, and Piyush Kumar,
Published in: TBA,
DOI: TBA,
Physics ArXiv E-print: arXiv: 2308.03607 [hep-lat].
20. *Investigating the Two-Dimensional Generalized XY Model using Tensor Networks,*
Authors: Vamika Longia, Anosh Joseph, and Abhishek Samlodia,
Published in: TBA,
DOI: TBA,
Physics ArXiv E-print: arXiv: 2307.13593 [hep-lat].
19. *Complex Langevin study of spontaneous symmetry breaking in IKKT matrix model,*
Authors: Arpith Kumar, Anosh Joseph, and Piyush Kumar,
Published in: PoS LATTICE **2022**, 213 (2023),
DOI: https://doi.org/10.22323/1.430.0213,
Physics ArXiv E-print: arXiv: 2209.10494 [hep-lat].
18. *Complex Langevin Simulations of PT-symmetric Models,*
Authors: Arpith Kumar and Anosh Joseph,
Published in: PoS LATTICE **2021**, 124 (2021),
DOI: https://doi.org/10.22323/1.396.0124,
Physics ArXiv E-print: arXiv: 2201.12001 [hep-lat].
17. *Thermal phase structure of dimensionally reduced super-Yang–Mills,*
Authors: David Schaich, Raghav G. Jha, and Anosh Joseph,
Published in: PoS LATTICE **2021**, 187 (2021),
DOI: https://doi.org/10.22323/1.396.0187,
Physics ArXiv E-print: arXiv: 2201.03097 [hep-lat].
16. *Large-N limit of two-dimensional Yang–Mills theory with four supercharges,*
Authors: Navdeep Singh Dhindsa, Raghav G. Jha, Anosh Joseph, and David Schaich
Published in: PoS LATTICE **2021**, 433 (2021),
DOI: https://doi.org/10.22323/1.396.0433,
Physics ArXiv E-print: arXiv:2109.01001 [hep-lat].
15. *Thermal phase structure of a supersymmetric matrix model,*
Authors: David Schaich, Raghav G. Jha, Anosh Joseph,
Published in: PoS LATTICE **2019**, 069 (2020),
Physics ArXiv E-print: arXiv:2003.01298 [hep-lat].
14. $\mathcal{N} = 2^*$ *Yang-Mills on the Lattice,*
Author: Anosh Joseph,
Published in: EPJ Web Conf. **175** (2018) 08019,
DOI: https://doi.org/10.1051/epjconf/201817508019,
Physics ArXiv E-print: arXiv:1710.11390 [hep-lat].
13. *5D Maximally Supersymmetric Yang-Mills on the Lattice,*
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11. *Precision Calculations of Nucleon Charges g_A, g_S, g_T,*
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9. *Probing TeV Physics through Lattice Neutron-decay Matrix Elements,*
Authors: Huey-Wen Lin, Tanmoy Bhattacharya, Saul D. Cohen, Rajan Gupta, Anosh Joseph and Boram Yoon,
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8. *Probing TeV Scale Physics in Precision UCN Decays,*
Authors: Rajan Gupta, Tanmoy Bhattacharya, Anosh Joseph, Saul D. Cohen and Huey-Wen Lin,
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7. *Probing Novel TeV Physics through Precision Calculations of Scalar and Tensor Charges of the Nucleon,*
Authors: Rajan Gupta, Tanmoy Bhattacharya, Anosh Joseph, Huey-Wen Lin and Saul D. Cohen,
Published in: PoS LATTICE **2012**, 114 (2012),
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6. *Investigating the Sign Problem for Two-dimensional $\mathcal{N} = (2,2)$ and $\mathcal{N} = (8,8)$ Lattice Super Yang–Mills Theories,*
Authors: Richard Galvez, Simon Catterall, Anosh Joseph and Dhagash Mehta,
Published in: PoS LATTICE **2011**, 064 (2011),
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5. *Supersymmetric Gauge Theories on the Lattice: Pfaffian Phases and the Neuberger o/o Problem,*
Authors: Dhagash Mehta, Simon Catterall, Richard Galvez and Anosh Joseph,
Published in: PoS LATTICE **2011**, 078 (2011),
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4. *Probing TeV Scale Physics via Ultra-cold Neutron Decays and Calculating Non-standard Baryon Matrix Elements,*
Authors: Rajan Gupta, Tanmoy Bhattacharya, Anosh Joseph, Huey-Wen Lin and Saul D. Cohen,
Published in: PoS LATTICE **2011**, 271 (2011),
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Physics ArXiv E-print: arXiv:1202.1320 [hep-lat].

3. *Theoretical Bounds on New Four-fermion Interactions and TeV Scale Physics,*
Authors: Tanmoy Bhattacharya, Rajan Gupta, Anosh Joseph, Huey-Wen Lin and Saul D. Cohen,
Published in: PoS LATTICE **2011**, 272 (2011),
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Physics ArXiv E-print: arXiv:1203.6843 [hep-lat].
2. *Probing TeV Physics through Lattice Neutron-decay Matrix Elements,*
Authors: Huey-Wen Lin, Saul D. Cohen, Tanmoy Bhattacharya, Rajan Gupta and Anosh Joseph,
Published in: PoS LATTICE **2011**, 273 (2011),
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1. *Gauge Theory Duals of Black Hole - Black String Transitions of Gravitational Theories on a Circle,*
Authors: Simon Catterall, Anosh Joseph and Toby Wiseman,
Published in: Journal of Physics: Conference Series **462**, 012022 (2013),
DOI: https://doi.org/10.1088/1742-6596/462/1/012022,
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Scientific Refereeing and Reviewing

- Guest Editor for *The European Physical Journal Special Topics* (2023),
- Scientific Journal Referee for *Physical Review*, *Journal of High Energy Physics*, *Physics Letters*, *International Journal of Modern Physics*, *Journal of Physics*, *Computer Physics Communications*, and *Quantum*.
- Grant Reviewer for *Science and Engineering Research Board (SERB), Government of India*.

Colloquia, Contributed Talks and Seminars

52. Gauge Gravity by the Ghats Webinar, Indian Institute of Science, Bangalore, INDIA (December 6, 2023).
51. MITP Journal Club Talk, School of Physics, University of the Witwatersrand, Johannesburg, SOUTH AFRICA (July 28, 2023).
50. High Energy Physics Seminar, Department of Physics, IIT Ropar, Ropar, INDIA (April 13, 2023).
49. Invited Talk, CONDMAT@2023, Ashoka University, Sonipat, INDIA (April 2, 2023).
48. Invited Talk, Workshop on Observables in Quantum Gravity, IISER Mohali, Mohali, INDIA (March 24, 2023).
47. Shivalik HEPCATS Meeting - Winter 2023, IIT Mandi, Mandi, INDIA (January 27, 2023).
46. Formal Theory Working Group Summary Report - The 25th DAE-BRNS High Energy Physics (HEP) Symposium, IISER Mohali, Mohali, INDIA (December 12 - 16, 2022).
45. SINP Theory Seminar, Saha Institute of Nuclear Physics (SINP), Kolkata, INDIA (November 15, 2022).
44. Contributed Talk, Numerical Methods in Theoretical Physics 2022, Asia Pacific Center for Theoretical Physics (APCTP), Pohang, SOUTH KOREA (May 15-21, 2022).
43. Free Meson Seminar, Department of Theoretical Physics, TIFR, Mumbai, INDIA (October 22, 2020).
42. 2019 Joburg School in Theoretical Physics: Aspects of Machine Learning, Mandelstam Institute for Theoretical Physics, The University of the Witwatersrand, Johannesburg, SOUTH AFRICA (November 11 - 15, 2019).
41. Physics Seminar, IISER Mohali, Mohali, INDIA (March 30, 2019).

40. Focus Week on Quantum Gravity and Holography, Kavli IPMU, The University of Tokyo, Tokyo, JAPAN (April 2 - 6, 2018).
39. Physics Seminar, The Institute of Mathematical Sciences, Chennai, INDIA (June 19, 2018).
38. National Strings Meeting - NSM 2017, NISER, Bhubaneswar, INDIA (December 5 - 10, 2017).
37. Quantum Spacetime Seminar, Department of Theoretical Physics, Tata Institute of Fundamental Research (TIFR), Mumbai, INDIA (November 20, 2017).
36. Theoretical Physics Seminar, Department of Theoretical Physics, Indian Association for the Cultivation of Science (IACS), Kolkata, INDIA (October 30, 2017).
35. Physics Seminar, School of Physical Sciences, National Institute of Science Education and Research (NISER), Bhubaneswar, INDIA (August 16, 2017).
34. School of Physics Colloquium, School of Physical Sciences, National Institute of Science Education and Research (NISER), Bhubaneswar, INDIA (August 14, 2017).
33. Physics Seminar, School of Physical Sciences, Indian Institute of Science Education and Research (IISER), Mohali, INDIA (August 8, 2017).
32. Bangalore Area Strings Meeting - BASM 2017, ICTS-TIFR, Bangalore, INDIA (July 31 - August 2, 2017).
31. Lattice 2017 - The 35th International Symposium on Lattice Field Theory, Granada, SPAIN (June 18 - 24, 2017).
30. Physics Seminar, Indian Institute of Technology - Palakkad, Kerala, INDIA (May 29, 2017).
29. String Theory Group Seminar, Harish-Chandra Research Institute, Allahabad, INDIA (April 12, 2017).
28. HRI Colloquium, Harish-Chandra Research Institute, Allahabad, INDIA (April 10, 2017).
27. IOP Colloquium, Institute of Physics, Bhubaneswar, INDIA (March 7, 2017).
26. DTP Colloquium, Department of Theoretical Physics, Tata Institute of Fundamental Research (TIFR), Mumbai, INDIA (August 23, 2016).
25. CHEP Seminar, Centre for High Energy Physics, Indian Institute of Science (IISc), Bangalore, INDIA (August 19, 2016).
24. ICTS String Group Seminar, International Centre for Theoretical Sciences (ICTS), Bangalore, INDIA (August 16, 2016).
23. Theoretical Physics Group Seminar, Raman Research Institute (RRI), Bangalore, INDIA (August 16, 2016).
22. Theoretical Physics Seminar, Chennai Mathematical Institute (CMI), Chennai, INDIA (August 11, 2016).
21. Physics Seminar, Department of Physics, Indian Institute of Science Education and Research (IISER), Pune, INDIA (August 10, 2016).
20. Lattice 2016 - The 34th International Symposium on Lattice Field Theory, University of Southampton, Southampton, UK (July 24 - 30, 2016).
19. Theoretical Physics Seminar, School of Mathematics, Trinity College Dublin, Dublin, IRELAND (May 23, 2016).
18. Lattice Field Theory Seminar, DAMTP, University of Cambridge, Cambridge, UK (January 28, 2016).
17. Dublin Theoretical Physics Colloquium, Trinity College Dublin, Dublin, IRELAND (October 29, 2014).

16. Lattice Field Theory Seminar, Institute for Theoretical Physics, University of Regensburg, GERMANY (July 22, 2014).
15. Lattice 2014 - The 32nd International Symposium on Lattice Field Theory, Columbia University, New York, NY, USA (June 23 - 28, 2014).
14. Quantum Theory Seminar, Institute of Theoretical Physics, University of Jena, GERMANY (May 20, 2014).
13. Discovery-HET Seminar, Niels Bohr Institute, University of Copenhagen, DENMARK (May 08, 2014).
12. String Theory Seminar, Theoretical Physics Group, Imperial College London, London, UK (March 24, 2014).
11. Quantum Field and String Theory Group Seminar, Humboldt University - Institute of Physics, Berlin, GERMANY (March 21, 2014).
10. Humboldt University, Berlin - NIC, DESY Zeuthen Joint Lattice Seminar, DESY Zeuthen, GERMANY (October 21, 2013).
9. Nonperturbative QFT: Methods and Applications, DESY Theory Workshop 2013, DESY Hamburg, GERMANY (September 24 - 27, 2013).
8. Jefferson Lab Theory Seminar, Thomas Jefferson National Accelerator Facility, Newport News, VA, USA (February 25, 2013).
7. Theory Group Seminar, Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM, USA (November 20-21, 2012).
6. Lattice Meets Experiment Workshop 2012: Beyond the Standard Model, University of Colorado at Boulder, Boulder, CO, USA (October 26 - 27, 2012).
5. The 6th International Symposium on Quantum Theory and Symmetries 6 (QTS 6), University of Kentucky, Lexington, KY, USA (July 20 - 25, 2009).
4. Bal Fest 2011, Syracuse University, Syracuse, NY, USA (December 3, 2011).
3. Workshop on Noncommutative Geometry and Quantum Field Theory, The Institute of Mathematical Sciences, Chennai, INDIA (December 18 - 24, 2008).
2. Syracuse - Cornell Theory Meeting, Syracuse University, Syracuse, NY, USA (January 11, 2008).
1. The 3rd Central New York Cosmology Workshop, Syracuse University, Syracuse, NY, USA (September 11, 2007).

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