Name of Teaching Staff	:	Dr. Moses J Kartha
Designation	:	Assistant Professor- Physics
Department	:	Department of Applied Science and Humanities
Date of Joining the Institution	:	01.08.2024
Email ID	:	moses.kartha@djsce.ac.in
Office Contact	:	022-42335000
Vidwan Link	:	https://djsce.irins.org/profile/677866
Google Scholar Link:	:	https://scholar.google.com/citations?user=_80AL2oAAAAJ&hl=en
Researchgate Link:	:	--
ORCID	:	https://orcid.org/0000-0003-2272-8361
Publons Researcher ID:		--

Qualifications with Class / Grade :

1. Post-Doctoral Fellow 19th August 2019 – 18th August 2022
   Indian Institute of Technology, Bombay
2. Ph. D. Physics
   Department of Physics, Savitribai Phule Pune University, Pune
   Thesis: Computational Study of non-equilibrium Growth Models and Their Application to Aggregation of Patchy Particles
3. M. Phil. Physics Grade: A
   Department of Physics, Savitribai Phule Pune University, Pune
   Thesis: Self Assembly of Janus Particles- A Monte Carlo simulation study
4. M. Sc. Physics CPI: 8.11/10 Grade: A
   School of Pure and Applied Physics, Mahatma Gandhi University, Kottayam
   Dissertation: Studies on Synchronization in Coupled Predator- Prey Systems (IISER Pune)
5. B. Sc. Physics 85.1% Class : Ist
   St. Berchmanns College, Mahatma Gandhi University, Kottayam

Total Experience in Years : **Teaching**: **4 years**

Papers Published in Journal: :

1. Surface Ozone Variability in The Urban and Nearby Rural Locations of Tropical India.
   A. L. Londhe, D. B. Jadhav, P. S. Buchunde and **M. J. Kartha**
   Current Science, 95, 1724**(2008).**

2. Phase Transition in Diffusion Limited Aggregation with Patchy Particles in Two Dimensions

Moses J Kartha and Ahmed Sayeed
Phys. Lett. A 380, 2791 **(2016).**

3.Experimental and Simulation Study on Nanosonic Particles and Nanomaterials of ZnS and Their Nano-Schottky Diodes
Sachin V Mukhamale, Priyanka Tabhane, Archana A. Meshram, Vilas A. Tabhane and **Moses J Kartha**
Cryst. Growth. Des. 16, 5501**(2016).**

4. Why Patchy-DLA Belongs To DP-Universality Class?
Moses J Kartha and Arun G. Banpurkar,
Phys. Rev. E 94,0621908 **(2016).**

5. Surface Morphology of Ballistic Deposition With Patchy Particles and Visibility Graph
Moses J Kartha
Phys. Lett. A 381,556 **(2017).**

6.Synthesis of CdS thin films at room temperature by RF-magnetron sputtering and study of its structural, electrical, optical and morphology properties
S Rondiya, A Rokade, A Funde, **M Kartha**, H Pathan, S Jadkar,
Thin Solid Films 631, 41 **(2017).**

7.Surfactants assisted solvothermal derived titania nanoparticles: synthesis and simulation
D Dastan, N Chaure, **M Kartha**
Journal of Materials Science: Materials in Electronics 28 (11), 7784 **(2017).**

8. Surface smoothening effects on growth of diamond films
BA Reshi, S Kumar, **MJ Kartha**, R Varma
AIP Conference Proceedings, 1942, 060027**(2018).**

9.Experimental and simulation study of growth of TiO 2 films on different substrates and its applications
TT Ghogare**, MJ Kartha**, SD Kendre, HM Pathan
AIP Conference Proceedings 1942 (1), 080056 **(2018).**

10. Investigation of diamond deposition on diamond, silicon and quartz substrates by microwave plasma chemical vapour deposition and Monte Carlo Simulations
Bilal Ahmad Reshi, **Moses J. Kartha**, Anuradha Misra, and Raghava Varma
Material Research Express 6(9),096420 **(2019).**

11.Simulation Study on Effect of Lockdown and Recovery Time on Spread of COVID-19 in High and Low-Density Areas;
Moses Kartha and Habib Pathan
10 April **(2020)** http://dx.doi.org/10.2139/ssrn.3572697

12. Growth transitions and Critical Behaviour in the non-equilibrium

aggregation of short, patchy nanorods,
Moses J Kartha and Mukta Tripathy
The European Physical Journal E 44 (5), 1**(2021).**

13. Morphological study of thin films: Simulation and experimental insights using horizontal visibility graph
Moses J. Kartha and Bilal Ahmad Reshi and Pravin S. Walke and Davoud Dastan
Ceramics International, 48, 5066**(2022).**

14. Experimental, theoretical and numerical simulation-based investigations on the fabricated Cu_2ZnSn thin-film-based Schottky diodes with enhanced electron transport for solar cell.
S.V. Mukhamale, **M.J. Kartha** and P.P. Khirade,
Nature Sci Rep 14, 15970 **(2024).**
https://doi.org/10.1038/s41598-024-63857-4

15. Experimental and simulation study of polymer nanocomposite thin films.
N. S Karmakar, A.Valavade, S. Jain, **M. Kartha** et al.
Materials Science and Technology. **(2025).**
doi:10.1177/02670836251340454

16. Diffusion limited aggregation of polymers with anisotropic interactions and phase transition.
Moses J. Kartha
Applied Physics A 131**,**507**(2025)**.

17. Ankita B. Jain, Moses Kartha, and Yash Prajapati. "Visibility Graph Approach to characterize Planetary Transit Signatures: A Case Study on OGLE IV data." *New Astronomy* 102548 **(2026)**.

Papers Paper Presentation in conference:

1. Surface Morphology of Thin Films and Visibility Graph
Moses Kartha
*Third International Computational Science and Engineering Conference, Doha, Qatar under TEXAS A&M university at Qatar, **2019***

2. Non-equilibrium Phase Transition in Deposition of Patchy Nano-rods
Moses J Kartha, Mukta Tripathy
*e- Conference on Soft Matter (e-CoSoM 2020) Sathyabama Institute of Science and Technology, **2020,** ISBN: 978-93-83409-57-0*

3. A Patchy model to study epidemic spreading in urban-like environments
Moses J Kartha
*Interdisciplinary National Conference on Scientific Approaches for Sustainable Development, Wilson College, Mumbai, 4^{th} 5^{th} December **2023**, ISBN: 978-93-93789-57-0*

4. Diffusion Limited Aggregation of Polymers with Anisotropic Interactions

and Phase Transitions
Moses J Kartha
*Indo-South Korea-Thailand 4th International Conference on Nanoscience and Nanotechnology for energy, environment and Biomedical Applications (iNEEBA-2024) 8-9 November **2024**.*

5. New Frontiers in Homeopathy-Approaches from Physics and Material Science
Moses Kartha and P. Nidheesh
Shodh- Rityu- 16-18 Special Issue (2025) ISSN-2454-6283
*Two days Multidisciplinary International Conference on Indian Knowledge System: Global Perspective (IKSGP-2025), Yeshwant Mahavidyalaya, Nanded. 10-11 February **2025***

6. Visibility Graph Analysis of Morphological Evolution of Interfaces During Thin film Deposition and Erosion
Moses Kartha, Dr. Ankita B Jain and Dr. Bilal A Reshi
*Emerging Trends in Experimental and Theoretical Physics (ETETO-2025), Veer Narmada South Gujarat University, Surat, 9th December **2025***

7. Analysis of Interfaces using Visibilty Graph with Tunneling effect
Moses Kartha and Dr. Bilal A Reshi
International Conference on Quantum Materials (ICQM-2026) Sardar Vallabhai National Institute of Technology, Surat
13-14th February **2026**

Area of Specialization : Modeling and Simulation, Computational Physics, Soft matter, Statistical Physics, Thin films, Epidemic modeling.

Professional Memberships : --

Subjects Taught

UG Level:
Classical Physics, Quantum mechanics, Nuclear Physics, Optics, Engineering Physics

PG Level: --

Projects Guided : **UG Level:**
Design of Small Scale Model to understand spread of Diseases- Aavishkar, Zonal round, University of Mumbai, 2022-23

PG Level: --

Recommended Students for Higher Education

Name of the Student	**University/Industry**
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Institute/Department Responsibility handled: Class in-charge