CURRICULUM VITAE

Dr. Rahul Saini,

Citations- 374, **i10-index**-11, **h-index**-11

Assistant Professor (Applied Mathematics), Expertise in FEM, and Neural Network Modelling,

Department of Applied Sciences & Humanities, School of Engineering and Technology,

Hemvati Nandan Bahuguna Garhwal University (A Central University), Srinagar, Uttarakhand, India,

Email: rahulsainiiit@gmail.com, **Contact No.**: +918126515226,

ORCID ID: 0000-0002-7389-1823, **Website:** https://sites.google.com/view/dr-rahul-saini/home

Research Interest: Applied Mathematics, Parallel Computing, Artificial Neural Networks, Finite Element Method, Spectral Methods, Linux OS based Computing (DEAL II), Computational Solid Mechanics.

Teaching Interest: Traditional Courses: Engineering Mathematics, Linear Algebra, Differential Equations, Numerical Methods.

Advanced Courses: Neural Networks, Financial Mathematics, Multivariate Techniques, Graph Theory.

Programming Languages: MATLAB, MATHEMATICA, DEAL II.

RESEARCH PROGRAM

- Computational modeling of functionally graded and composite structures with porosity under thermal and dynamic environments.
- Advanced numerical methods (FEM, spectral and quadrature methods) with parallel computing
- Data-driven and neural network approaches for structural analysis.
- Multiscale and nonlocal elasticity models for nano- and micro-structures.

PROJECTS/GRANTS

S. No.	Project Title	Funding Agency	Project Cost
1.	Analysis of Propagation of Waves in Composite Structures	"Call for Minor... for 2024-25" HNBGU	1,80,000/-

RESEARCH SUPERVISION

S. No.	Student Name	Degree	Status
1.	Mr. Bhupendra Kumar	Ph.D.	Ongoing
2.	Ms. Vishakha Garg	Ph.D.	Ongoing

PUBLICATIONS

Journals

1. **R. Saini**, Vibration analysis of bi-directional heated functionally graded circular nanoplates using generalized differential quadrature method integrated with parallel computing, ***IJSSD***, 2026, ***Q1,*** 10.1142/S0219455426502147.
2. M.A. Khadimallah and **R. Saini**, Effects of Pasternak foundation on asymmetric thermomechanical stability analysis of bi-directional functionally graded discs, ***IJSSD***, 2026, ***Q1***, https://doi.org/10.1142/S0219455426500641.
3. **R. Saini** and S. Pradyumna, A layer-wise theory for the dynamic analysis of FG composite nanobeam under thermal environment using Chebyshev collocation technique, ***JVC*****,** 2023, ***Q1*****,** doi.org/10.1177/10775463231212529**.**
4. **R. Saini** and S. Gopalakrishnan**,** Nonlocal boundaries and paradoxes in free vibration of functionally graded non-uniform cantilever nanobeams and annular nanoplates, ***Structures*****,** 2023, ***Q1*****,** doi.org/10.1016/j.istruc.2023.06.095.
5. **R. Saini** and S. Pradyumna, Asymmetric vibrations of functionally graded annular nanoplates under thermal environment using nonlocal elasticity theory with modified nonlocal boundary conditions, ***Journal of Engineering Mechanics (ASCE)*****,** 2023, ***Q1*****,** doi.org/10.1061/JENMDT.EMENG-7016.
6. **R. Saini,** R. Saini, A. Kumar, and M.A. Khadimallah, Free axisymmetric vibrations of heated non-uniform bi-directional FGM Mindlin rings employing quadrature approaches, ***Thin-Walled Structures*****,** 2022, ***Q1*****,** doi.org/10.1016/j.tws.2022.110482.

7. **R. Saini,** N. Ahlawat, P. Rai, and M.A. Khadimallah, Thermal stability analysis of functionally graded non-uniform asymmetric circular and annular nano discs: Size-dependent regularity and boundary conditions, ***EJMS*****,** 2022, ***Q1*****,** doi.org/10.1016/j.euromechsol.2022.104607.
8. **R. Saini** and R. Lal, Axisymmetric vibrations of temperature-dependent FG moderately thick circular plates with 2D material and temperature distribution, ***Eng. with Comp.*****,** 2022, ***Q1*****,** doi.org/10.1007/s00366-020-01056-1.
9. R. Lal and **R. Saini,** Vibration analysis of FGM circular plates under non-linear temperature variation using generalized differential quadrature rule, ***Applied Acoustics*****,** 2020, ***Q1*****,** doi.org/10.1016/j.apacoust.2019.107027.
10. R. Lal and **R. Saini,** On radially symmetric vibrations of functionally graded non-uniform circular plate including non-linear temperature rise, ***EJMS*****,** 2019, ***Q1*****,** doi.org/10.1016/j.euromechsol.2019.103796 .
11. R. Lal and **R. Saini,** Vibration analysis of FG circular plates of variable thickness under thermal environment by generalized differential quadrature method, ***JVC*****,** 2019, ***Q1*****,** doi.org/10.1177/1077546319876389.
12. **R. Saini**, An investigation for asymmetric vibrations of multi-dimensional FG heated annular nanoplates using Chebyshev polynomials and parallel computing, ***JVET***, 2025, ***Q2*****,** https://doi.org/10.1007/s42417-025-01860-3.
13. **R. Saini**, A review on artificial neural networks for structural analysis, ***JVET***, 2025, ***Q2*****,** https://doi.org/10.1007/s42417-024-01749-7.
14. M.A. Khadimallah, D. Ouis, **R. Saini,** E. Ali, Multidirectional understanding of chiral structure on the honeycomb sandwich composite sheet: Control sensing of density, ***Advances in Nano Research***, 2025, ***Q2***, https://doi.org/10.12989/anr.2025.18.6.529.
15. N. Ahlawat and **R. Saini,** Vibration and buckling analysis of elastically supported bi-directional FGM Mindlin circular plates having variable thickness, ***JVET*****,** 2023, ***Q2*****,** doi.org/10.1007/s42417-023-00856-1.
16. **R. Saini** and S. Pradyumna, Effect of thermal environment on the asymmetric vibration of temperature-dependent two-dimensional functionally graded annular plate by Chebyshev polynomials, ***Journal of Thermal Stresses*****,** 2022, ***Q2*****,** doi.org/10.1080/01495739.2022.2090472.
17. **R. Saini,** R. Lal, R. Saini, and M.A. Khadimallah, Dynamic analysis of heated temperature-dependent bi-directional advanced composites circular plates with quadratic thickness variation, ***Journal of Thermal Stresses*****,** 2023, ***Q2*****,** doi.org/10.1080/01495739.2022.2159902.
18. **R. Saini** and R. Lal, Effect of thermal environment and peripheral loading on axisymmetric vibrations of non-uniform FG circular plates via HDQM, ***JVET*****,** ***2***021, ***Q2*****,** doi.org/10.1007/s42417-020-00270-x.
19. R. Lal and **R. Saini,** On the high-temperature free vibration analysis of elastically supported FGM plates under mechanical in-plane force via GDQR, ***J. of Dyn. Sys.*****,** ***Meas. and Cont. (ASME)*****,** 2019, ***Q2*****,** doi.org/10.1115/1.4043489.
20. R. Lal and **R. Saini,** Thermal effect on radially symmetric vibrations of temperature-dependent FGM circular plates with nonlinear thickness variation, ***Materials Research Express*****,** 2019, ***Q2*****,** doi.org/10.1088/2053-1591/ab24ee.
21. **R. Saini** and Renu Saini, Thermal buckling analysis of nonuniform functionally graded nanobeams: Analytical and numerical solutions, ***J. of Mech. of Mat. and Str.***, 2024, ***Q3***, https://doi.org/10.2140/jomms.2024.19.837.
22. R. Saini and **R. Saini**, Effect of bilinear thickness variation, Pasternak foundation, orthotropy and non-homogeneity on the vibrations of rectangular plates, ***Int J. of Vehicle Noise and Vibration***, ***Q4*****,** 2025, (Accepted).
23. **R. Saini** and Y. Kumar, Free vibration analysis of annular sector sandwich plates using first-order shear deformation theory, ***Int. J. of Vehicle Noise and Vibration*** 18, 2023, ***Q4*** doi.org/10.1504/IJVNV.2022.128287.

Book Chapters

- **R. Saini,** *Nanomaterials for Advanced Technologies*, **Springer-Nature,** 2022, DOI: 10.1007/978-981-19-1384-6_8.
- **R. Saini,** *Mathematical Methods in Dynamical Systems*, **CRC Press, Taylor & Francis,** 2023**,** DOI: https://doi.org/10.1201/9781003328032.

Conferences

- **R. Saini, ICIAM-2023,** Waseda University, Tokyo, Japan.
- **R. Saini, JOINT EVENT: ICCS26 & MECHCOMP8,** Porto (FEUP), Portugal.
- **R. Saini** and R. Lal, **ICM-13, RMIT University, Melbourne, Australia**.

PROFESSIONAL BACKGROUND

- **Assistant Professor** in Department of Applied Sciences and Humanities, **HNBGU,** Srinagar Garhwal, India.

- **Post-Doctoral Associate** in **New York University.**
- **Post-Doctoral Fellow** in **Indian Institute of Science Bangalore**.
- **Post-Doctoral Fellow** in **Indian Institute of Technology Delhi**.

ACADEMIC DETAILS

- **2015-2020, Ph.D.** in Mathematics, **Indian Institute of Technology Roorkee, India.**
- 2015, **M.Sc.** in **Applied Mathematics**, Indian Institute of Technology Roorkee, India.
- 2012, **B.Sc.** in **Mathematics**, Physics and Chemistry, G K V Haridwar, India.

AWARDS/SCHOLARSHIPS

- Selected for **International Travel Scheme** by Science and Engineering Research Board, India.
- Selected for **National Post-Doctoral Fellowship** by Science and Engineering Research Board, India.
- Selected for **Dr. D. S. Kothari Post-Doctoral Fellowship** by University Grant Commission, India.
- Selected for **Institute PDF** at IIT Bombay, and IIT Delhi, India.
- **"Young Scientist Award"** by UCOST, Uttarakhand, India.

EXPERIENCE

- 5.5 years (post-doctorate + teaching) experience.

PROFESSIONAL MEMBERSHIPS

Member of Indian Society of Theoretical and Applied Mechanics and Indian Mathematical Society.

Editorial Board Member (ALKU Journal of Sciences)

Reviewer (22+ Journals):

Elsevier: Applied Mathematical Modelling, International Journal of Mechanical Sciences, EJMS**,**
Springer: Engineering with Computers, Nonlinear Dynamics, Journal of Vibration Engineering & Technologies,
Techno-press**:** Smart Structures and Systems, Steel and Composite Structures,
ASCE: Journal of Engineering Mechanics,
World Scientific: International Journal of Structural Stability and Dynamics,
SAGE: Journal of Vibration and Control,
American Institute of Physics: AIP Advances,
Taylor & Francies: Journal of Thermal Stresses, etc.

TALKS

- Invited talk in **"*9th International Conference and Expo on Ceramics and Composite Materials*", 2023**.
- Invited talk in **"*6th International Conference on Ceramics and Composite Materials*", 2020**.
- Invited talk on **"*Software Packages Used in Research*"** at School of Basic Sciences and Technology, IIMT University, Meerut, India.

TEACHING EXPERIENCE

- Undergraduate: Engineering Mathematics, Linear Algebra, Differential Equations, Numerical Methods,
- Graduate: ODE/PDE, Integral Equations.