Name: **Deepankar Das**
Department: Mechanical Engineering
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Education

Ph.D. in Mechanical Engineering *2018 – Present* CPI: 9.5/10
IIT Kanpur
Thesis(submitted): Symmetry based analysis of instabilities in a plate with stiffened edge.
Supervisor: Basant Lal Sharma

M.Tech in Machine Design *2016 – 2018* CPI: 9.6/10
IIT (ISM) Dhanbad
Thesis: Analytical and experimental investigation of generic perforated bias flow liners.
Supervisor: Rabindra Nath Hota

B.Tech in Mechanical Engineering *2012 – 2016* CPI: 8.0/10
IIT (ISM) Dhanbad

Senior Secondary School (Grade 12th) *2012* Score: 84.0%
CBSE

Secondary School (Grade 10th) *2010* CGPA: 9.6/10
CBSE

Professional Summary

Ph.D. student in Mechanical Engineering, specializing in nonlinear problems involving structural mechanics. Expertise in using commercial CAE tools like ABAQUS and COMSOL Multiphysics for advanced structural and aero-acoustic analysis as well as writing finite element codes from scratch for specialized problems. Proficient in symmetry-based nonlinear finite element analysis (FEA) techniques and experienced in tackling complex engineering challenges through both analytical and numerical methods.

Has analytical and experimental experience with aeroacoustic problems during M.Tech.

Key Skills

- **Technical Expertise:** Nonlinear Finite Element Analysis, Structural Buckling Analysis, Aero-acoustics.
- **Software Proficiency:** ABAQUS CAE, COMSOL Multiphysics, ANSYS, SOLIDWORKS.
- **Programming Skills:** Python, MATLAB, C, C++.

Professional Experience

Ph.D. Candidate *2018 – Present*
IIT Kanpur

- Teaching assistant: Duties involved preparing solutions for assignments, grading them and attending to students' doubts regarding the courses.

Course	Instructor	Period
Nature and Properties of Materials	C. Chandraprakash	2018-19 2nd Semester
Introduction to Solid Mechanics	C. Chandraprakash	2019-20 1st Semester
Engineering Graphics	Basant Lal Sharma	2019-20 2nd Semester
Introduction to Solid Mechanics	C. Chandraprakash	2020-21 1st Semester
Introduction to Continuum Mechanics	Basant Lal Sharma	2020-21 2nd Semester
Introduction to Solid Mechanics	Basant Lal Sharma	2021-22 1st Semester
Calculus of Variations	Basant Lal Sharma	2021-22 2nd Semester
Wave Propagation in Solids	C. Chandraprakash	2022-23 2nd Semester
Introduction to Solid Mechanics	Basant Lal Sharma	2023-24 1st Semester
Introduction To Complex Analysis	Saurabh Kumar Singh	2024-25 1st Semester

- Tutor in undergraduate course on Mechanics of Solids, under instructor C.S.Upadhyay during the period of 2022-23 1st Semester. The duties involved solving tutorial problems in class, clearing corresponding doubts and grading

examination answer scripts.

M.Tech Research Scholar *2016 – 2018*
IIT (ISM) Dhanbad

– Contributed to design and setup of multi-flow impedance tube setup for measuring acoustic characteristics of bias-flow liners.

Internship

Undergraduate vocational training *08.06.2015 – 07.07.2015*
Steel Authority of India, Rourkela

Research Topics and Projects

Symmetry-based Analysis of Instabilities in a Plate with Stiffened Edge Ph.D. Research

– Formulated and carried out semi-analytical post-buckling analysis of a plate with stiffened edge, and applied symmetry-based nonlinear FEA techniques to study instabilities in the same.

Analytical and Experimental Investigation of Generic Perforated Bias Flow Liner M.Tech Thesis Project

– Performed analytical modeling and analysis of the perforated liner of a jet engine, and partially contributed to the numerical analysis of the same using COMSOL Multiphysics.

Projects done during course work

– Obtained state-space solutions for a rolling coin simulation and its animated results.

– Derived conservation laws for micro-polar elasticity using Noether's theorem.

Scholastic Achievements

– Presented my PhD work at the 58^{th} Meeting of the Society for Natural Philosophy, Aarhus university, Denmark.

– Presented my PhD work at 6^{th} Indian Conference on Applied Mechanics, NIT Warangal.

– **GATE (2016):** National Rank – 2635 $\approx$ 98 percentile.

– **IIT JEE (2012):** National Rank – 5354 $\approx$ 98.8 percentile.

– **9th National Cyber Olympiad (2009):** National Rank – 82.

Major Courses

– **Undergraduate-level courses (B.Tech):** Advanced solid mechanics, Dynamics of machinery

– **Postgraduate-level courses (M.Tech):** Mechanical Vibration and control, Finite Element.

– **Postgraduate-level courses (Ph.D.):** Nonlinear Finite Element Analysis, Introduction to continuum mechanics, Mechanics of soft materials, Calculus of variations, Granular materials.

Talks

– Gave talks based on my PhD thesis in Research scholar's day 2022 and Institute research symposium 2024 held at IIT Kanpur.

– Abstract was accepted in ESMC 2022 and ECCOMAS 2024 conferences (couldn't present due to issues with visa application)

Publications

1. **Deepankar Das**, B. L. Sharma, "Equilibrium of circular von-Kármán plate bonded with Kirchhoff rod," *International Journal of Solids and Structures*[UNDER REVIEW][arXiv draft: 2501.10442]

2. **Deepankar Das**, B. L. Sharma, "Local bifurcation analysis of circular von-Kármán plate with Kirchhoff rod boundary," *SIAM Journal on Applied Mathematics*, vol. 85, no. 4, pp. 1749–1784, 2025, DOI: 10.1137/24M1703999
3. N.K. Jha, **Deepankar Das**, Ashutosh Tripathi, R.N. Hota, "Acoustic damping: Analytical prediction with experimentalvalidation of mixed porosity liners and analytical investigation of conical liners," *Applied Acoustics*, vol. 150, 2019,Pages 179-189, ISSN 0003-682X. DOI: 10.1016/j.apacoust.2019.02.006.
4. **Deepankar Das**, Utkarsh Chhibber, R.N. Hota, "Modification of Two-Load Method for Measuring Acoustic Properties with Mean Flow," in *Kumar M., Pandey R., Kumar V. (eds) Advances in Interdisciplinary Engineering.* Lecture Notes in Mechanical Engineering. Springer, Singapore. DOI: 10.1007/978-981-13-6577-5_55.

Extracurricular Projects

– **Autonomous Robotics:** Designed an autonomous robot for object sensing and manipulation.

– **Combat Robotics:** Built a user-controlled robot for robotics combat competitions and won first prize in institute-level robotics war competition.

Work in Progress

- Instabilities in system of plate and chiral rod.
- Wrinkling in thin plates.
- Instabilities in system of rod and infinite plate.