Dr. Prashanta Kr Mahato

Professor
Mechanical Engineering
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Academics Qualification:

- **B. Tech.** in Mechanical Engineering, Kalyani Govt. Engg. College, Kalyani, 2003.
- **M. E.** in Applied Mechanics, Bengal Engg. & Science University, Shibpur, 2005.
- **Ph. D** in Aerospace Engineering, Indian Institute of Technology Kharagpur, 2010. (The PhD Topic: S*tatic, dynamic and flutter control of laminated composite plates in hygro-thermal environment employing active fiber composite)*

Professional Experience:

- **Post Doctoral Research:** at Politechnico Di Torino for One year from Nov'2013 to Oct'2014, Under Erasmus Mundus India4EU programme with fellowship.
- **Juniors Project officer:** at IIT Kharagpur Four year (2006-2010) under ARDB project

Working Experience:

- **Professor**, Department of Mechanical Engineering, IIT(ISM), Dhanbad, 2024-till date.
- **Associate Professor**, Department of Mechanical Engineering, IIT(ISM), Dhanbad, 2019-2024.
- **Assistant professor**, Department of Mechanical Engineering, IIT(ISM), Dhanbad, 2010-2019.
- **Lecturer**, Hooghly Engineering and Technology College, W.B., 2005-2006.

Subject Taught:

UG:

1. *Engineering Mechanics*
2. *Theory of Machine*
3. *Advanced solid Mechanics*

PG/PGD:

1. *Composite Materials*
2. *Finite Element Method*
3. *Theory of Elasticity*
4. *Mechanical Vibration*
5. *Structural Dynamics and Aero-elasticity*
6. *Optimization Theory*

Area of Research Interests:

Composite Materials, Active Vibration Control, Computational Mechanics, Aero-elasticity

External Funding/Projects:

1. ETA-337-2013: *Active modal vibration control of composite structure, Funding Agency: DST, Total fund- 27.1 Lac, Duration: 01-12-2014 to 30-11-2017*

2. CRG_2018_004876: *Model updating and aeroelastic analysis of delaminated aircraft structure: SERB (DST), Total fund: 46:8 Lac, Duration:* 29-Jun-*2019 to* 28-Dec-2022

3. MTR_2023_001157: *Aeroelastic and gust response analysis of variable stiffness smart composite wing, SERB (DST), Total fund: 6:6 Lac, Duration:* 15-Jan-*2024 to* till date

External Travel Fund:

1. *ITS_2023_001433: Awarded a travel grant for attending ASME SSDM conference, Funding Agency: SERB, Total fund- 1.9 Lac, 4th September 2023*

PhD Guidance: Completed (06), Ongoing (03):

1. *Dr. Ganesh Shankar :(sole guidance), PhD Awarded in June' 2018.*

   *Thesis Title "**Vibration Analysis and Control of Delaminated Smart Composite Plates in Hygrothermal Environment**"*

2. *Dr.* Surendra Singh Godara, *PhD Awarded in June' 2022.*

   *Thesis Title "**Micromechanical Analysis of Hybrid Smart Composites Reinforced with Carbon Nanotubes"***

3. *Raj Bharati: PhD Awarded in June' 2022. (*External Guide: Prof. Erasmo Carrera, Polytechnico di Torino, Italy),

   Thesis Title*: **Aerolesatic analysis of composite Box beam using Unified theory**".*

4. *Mr Prashanta Chowdhury: PhD Awarded in June' 2022. (*External Guide: Dr. Prasun Jana, IIT, Kharagpur)

*Thesis Title "**Optimal design of thin-walled orthotropic laminated structures for maximum buckling load**"*

5. *Dr.* ASHES MAJI , *PhD Awarded in June' 2022.*

   *Thesis Title "**Static and Dynamic Analysis of Laminated Composite Plates Using Refined plate Theory"***

6. *Mr Jayant Prakash: PhD Awarded in June' 2024.*

   Propose Title*: Active vibration and flutter control of the delaminated composite structure in a hygrothermal environment*

7. *Mr Avik Chowdhury: (on going), (External Guide: Dr. B. Paul, IIEST, Shibpur).*

   Proposed Title: "Evaluation of Mechanical behavior of Novel hip implant: Numerical and experimental investigation".

8. *Pritam Mandal (on going):*

   Proposed Title:, "Aeroelastic analysis of variable stiffness laminated composite structure".

9. *Mr. Ashutosh Kumar (on going):*

   Proposed Title:, "Dynamic and aeroelastic Analysis of Box-beam using Lagrange polynomial".

M. Tech. Project Guidance:

Completed: 30

Ongoing: 02

List of Publications:

International Journals

1. Mahato P.K., Maiti D.K. (2010), Aeroelastic analysis of smart composite structures in hygro-thermal environment. *Composite Structures*, 92(4), 1027-1038. **Q1**
2. Mahato P.K., Maiti D.K. (2010), Flutter control of smart composite structure in hygro-thermal environment. *ASCE Journal Aerospace Engineering*, 23(4), 317-326. **Q2**
3. Mahato P.K., Maiti D.K. (2012), Active vibration control of smart composite structures in hygro-thermal environment. *Structural Engineering and Mechanics*, 44(2), 127-136. **Q3**
4. Carrera E., M. Filippi, P. K. Mahato, A. Pagani, (2015) 'Advanced Models for the Free Vibration Analysis of Laminated Beams with Compact and Thin-Walled Open/Closed Sections', *Journal of Composite Materials*, 2015, Vol 49 (17). **Q2**
5. E. Carrera, M. Filippi, P. K. Mahato, A. Pagani, (2016) 'Accurate analysis of 1-cell 2-cell box beam' Composite Structure, 136, 372-386. **Q1**
6. E. Carrera, M. Filippi, P. K. Mahato, A. Pagani, (2016), Free-vibration tailoring of single and multi-bay laminated box structures by refined beam theories' *Thin Walled Structure*, 109, 40-49. **Q1**
7. Shankar Ganesh, Keshava S. Kumar , Mahato P. K. (2016), 'Free Vibration Analysis of Delaminated Composite Plates using Finite Element Method', Procedia Engineering, 1067-1075, 144.
8. Shankar G, Keshava S. Kumar , Mahato P. K. (2017), 'Vibration analysis and control of smart composite plates with delamination and under hygrothermal environment', *Thin Walled Structure*, 116, 53-68. **Q1**
9. Shankar G, Mahato P. K. (2017), 'Vibration analysis and control of delaminated/or dmaged composite plate structure using finite element analysis', Material at High Temeperature. 34 (5-6), 342-349. **Q2**
10. Shankar G, Keshava S. Kumar , Mahato P. K. (2020) Transient Analysis and Control of Delaminated Composite Plates in Hygrothermal Environment using AFC Actuator, Mechanics of Advanced Materials and Structures, 27 (16), 1412-1432. **Q2**
11. A Maji, PK Mahato, 2020, Development and applications of shear deformation theories for laminated composite plates: An overview, Journal of Thermoplastic Composite Materials, (https://doi.org/10.1177/0892705720930765). **Q2**
12. SS Godara, PK Mahato, (2020), Micromechanical technique based prediction of effective properties for hybrid smart nanocomposites, Mechanics of Advanced Materials and Structures, 1-12. **Q2**
13. Raj B Bharati, M. Filippi, P. K. Mahato, E. Carrera, (2020) 'Flutter analysis of laminated composite structures using Carrera Unified Formulation' Composite Structure, 253, 112759. **Q1**

14. Raj B Bharati, P. K. Mahato, M. Filippi, E. Carrera, (2021) Flutter analysis of rotary laminated composite structures using higher-order kinematics, Composites Part C: Open Access 4, 100100. **Q1**

15. PK Choudhary, PK Mahato, P Jana, 2021, Optimization of surface-profile of orthotropic cylindrical shell for maximizing its ultimate strength, Mechanics of Advanced Materials and Structures, 1-13. **Q2**
16. PK Choudhary, PK Mahato, P Jana, 2022, Cross-section optimization of thin-walled open-section composite column for maximizing its ultimate strength, IMechE Part L: J. of Materials: Design and application, Vol. 236(2) 413–428. **Q2**
17. J P Varun , P Mondal , P K. Mahato, 2022, Enhancement of aeroelastic performance of a smart delaminated composite plate under hygrothermal environment, Composite Structures 292 (2022) 115662. **Q1**
18. Raj B Bharati, P. K. Mahato, M. Filippi, E. Carrera, (2022), Flutter analysis of delaminated composite box-beam using higher-order kinematics, Composite Structures 301 (2022) 116145. **Q1**
19. A Chaudhuri, PK Mahato, B Pal, (2024), Evaluation of the mechanical characteristics of Ti64 cubic and body-centered-cubic porous structures: A finite element study validated with physical tests, Mechanics of Advanced Materials and Structures, 1-14 **Q2**
20. P Mondal, JP Varun, PK Mahato, (2024), Open loop flutter control of optimally oriented smart variable stiffness plates under hygrothermal environment, European Journal of Mechanics-A/Solids 106, 105284 **Q1**

Book chapter

1. Raj B Bharati, Prashanta K Mahato, E Carrera, M Filippi, A Pagani, 2020, Free Vibration and Stress Analysis of Laminated Box Beam with and Without Cut-Off, Lecture Note in Mechanical Engineering (ICTACEM 2017), 185-196, Springer, Singapore.
2. A Maji, PK Mahato, 2022, Buckling Analysis of Nonlinear First-Order Shear Deformation Composite Plates, Lecture Note of Mechanical Engineering, Machines, Mechanism and Robotics, 609-621. (iNaCoMM 2019)

International Conferences/proceeding

1. PK Mahato, P Mondal, 2023, Aeroelastic Analysis of VAT Nano-Composite Plate, ASME Aerospace Structures, Structural Dynamics, and Materials Conference, June 19–21, 2023, San Diego, California, USA
2. Godara, S.S., Mahato, P.K,, 2020, Effect of interphase between CNT and polyimide on the elastic and piezoelectric properties of hybrid smart nano-composites, Materials Today: Proceedings-21, pp. 1144-1148.
3. Godara, S.S., Mahato, P.K., 2020, Prediction of effective properties for composites using micromechanics method, Materials Today: Proceedings-21, pp. 1375-1379.

4. S.S.Godara, P.K.Mahato 2020 “A study on micromechanical methods for the analysis of composite materials, Materials Today: Proceedings, 26 (2), 2020, .1096-1098.
5. S.S.Godara, P.K.Mahato 2020 “Effect of interphase between CNT and polyimide on the elastic and piezoelectric properties of hHybrid smart nano-composites”, Materials Today: Proceedings, 21 (2), 2020, 1148-1148.
6. S.S.Godara, P.K.Mahato 2020 “Prediction of effective properties for composites using micromechanics method”, Materials Today: Proceedings, 21 (2), 2020, 1375-1379.
7. Aditya Raj, Jayant Prakash Varun, *and* P. K. Mahato, “Fabrication and vibration damping analysis of basalt fiber reinforced composite beam”, AIP Conference Proceedings 2134, 080002 (2019).
8. P.K. Mahato, J.P. Varun, G. Shankar, S. Kumar, and C.S.Verma, Experimental and numerical investigation of Free vibration analysis and control of composite plates with and without delamination, Accepted for oral presentation, ICMAMS, Italy, 17th -20th June, 2018 at Politecnico di torino, Turin Italy.
9. Shankar G., Varun J.P., Mahato P.K., Effect of delamination on vibration characteristic of laminated composite plate, Accepted for conference, will held on IIT Kharagpur December 2017 (ICTACEM 2017).
10. Mahesh Chand Gupta, Durga P. Patra, Chandra S. Verma, S. Kumar and P.K. Mahato.,Experimental Modal Analysis of a Cantilevered Laminated Composite Plate. IIT Kharagpur December 2017 (ICTACEM 2017).
11. Raj B. Bharati, Prashanta K. Mahato, E. Carrera, M. Filippi and A. Pagani., Free vibration and stress analysis of laminated box beam with and without cut-off. IIT Kharagpur December 2017 (ICTACEM 2017).
12. Ganesh Shankar, Kumar, K.S, P.K Mahato, Free Vibration Analysis of Delaminated Composite Plates Using Finite Element Method, ICVOP-15 ,IIT Guwahati.
13. Ganesh Shankar, P.K Mahato, Vibration control of laminated composite structure with material uncertainty or damage: A review, conference proceeding in IMECH-14, NIT, Tirchy.
14. P. K. Mahato, E. Carrera, M. Filippi and A. Pagani. Analysis of laminated box beams using 1d carrera unified formulation. Bercelona, spain, july 2014.
15. P. K. Mahato , E. Carrera,M. Filippi and A. Pagani. One-dimensional cuf models for the analysis of laminated structures. Melbourne, Australia, November 2014.
16. Mahato P.K, Maiti D.K. (2011), Aeroelastic analysis and control of functionally graded plate in thermal environment. *International Conference of Composite Structures (ICCS 16)*, Porto, 2011. (Accepted)
17. Mahato P.K., Maiti D.K. (2011), Effect of hygro-thermally and piezo-electrically induced preload on static and dynamic behavior of laminated composite structures. *International Conference on Composite Structure* (ICCS 16), Porto, Portugal, July 27-29.
18. Mahato P.K., Maiti D.K. (2007), Finite element analysis of smart laminated composite structures under hygro-thermal environment. *International Conference on Theoretical, Applied, Computational and Experimental Mechanics* (ICTACEM-2007/0156), Kharagpur, December 27-29.

19. Vineel S., Mahato P.K, Maiti D.K. (2010) Static and Dynamic Analysis of Functionally Graded Material. ICTACEM 2010, Kharagpur, December 27-29.
20. Mahato P.K, Maiti D.K. (2009) Transient response analysis of smart composite structures in hygro-thermal environment. *International Conference On Vibration Problem (ICoVP)*, Kharagpur, January 19-22.
21. Mahato P.K, Maiti D.K. (2009) Vibration control of AFC laminated composite structure in hygro-thermal environment. *International Conference on computational mechanics and simulation(ICCMS09)*, Mumbai, December 1-3.
22. Mahato P.K, Maiti D.K. (2009) Flutter control of smart wing structures in subsonic regime. N*ational Conference On MEMS, smart structure and system (ISSS MEMS)*, CGCRI, Kolkata, October 14-16.
23. Mahato P.K, Maiti D.K. (2008), A study on aeroelastic performance of smart composite structures in hygro-thermal environment. *International Conference on Smart Materials Structures and Systems (ISSS 2008/P75),* Bangalore, July 24-26.

Referees:

Sl. No.	Name	Occupation or position	Address	E-Mail	Phone No.
1.	Dr. Erasmo Carrera	Professor	Politecnico di Torino, Department of Mechanical and Aerospace Engineering, Corso Duca degli Abruzzi, 24 , 10129, Torino, Italy	erasmo.carrera @polito.it	+39-0110906836
2.	Dr. Dipak K Maiti	Professor	Department of Aerospace Engineering, IIT kharagpur - 721302, W.B, India	dkmaiti@aero.iitkgp.ernet.in	+91-3222-283028
3.	Prof. Ranjan Banerjee	Professor	City University of London, Northampton Square London EC1V 0HB United Kingdom	j.r.banerjee@city.ac.uk	+44 (0) 20 7040 8924