Sajan Kumar Wahi

Skill Assistant Professor

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DOB: 05 September 1991



Research Interests

Smart Material and Structures, Magnetostrictive Materials, Constitutive Modelling, Unimorph Energy Harvester, Asymptotic Modeling of Membrane and Plate Formulation, Transducer Modeling, Large Deformation, Finite Elasticity.

Education

Ph.D., Applied Mechanics Jan. 2017 – August. 2023

Indian Institute of Technology, Delhi (IITD), New Delhi, India *CGPA: 9.231/10*

PhD Dissertation: "Asymptotic modeling of magnetostrictive material based structures with application to energy harvesting". Advisor – Prof. Sushma Santapuri, IITD

M.Tech., Machine Design Engineering July. 2013 – June 2015

National Institute of Technology, Kurukshetra (NITK), Haryana, India *CGPA: 9.2174/10 (**Rank 3**)*

B.Tech., Mechanical Engineering Aug. 2009 – May 2013

JMIT, Kurukshetra University, Kurukshetra (KUK), Haryana, India *CPI: 73.67/100*

Technical Skills

Software Tools: MATLAB, LaTeX, COMSOL Multiphysics, Mathematica, Microsoft Office, Inkscape, GLE, Origin
Experimental Tools: Hands-on experience with DAQ system, DAQExpress/LABView, vibration related devices
FEA Expertise: Analysis of Static, Transient, Modal, Harmonic, Random (PSD), Linear, Nonlinear and Multiphysics problems

Journal Publication

1. **S K Wahi**, M Kumar, S Santapuri, and M J Dapino. "Computationally efficient locally linearized constitutive model for magnetostrictive materials." **Journal of Applied Physics** 125, no. 21 (2019): 215108. DOI: 10.1063/1.5086953

2. M N Ali, **S K Wahi**, and S Santapuri. "Modeling and analysis of a magnetoelastic annular membrane placed in an azimuthal magnetic field." **Mathematics and Mechanics of Solids** (2021): 1081286521997511. DOI: 10.1177/1081286521997511

3. A Mishra, Y S Joshan, **S K Wahi**, S Santapuri. "Structural instabilities in soft electro-magneto-elastic cylindrical membranes." **International Journal of Non-Linear Mechanics** (2023):151, 104368. DOI: 10.1016/j.ijnonlinmec.2023.104368

4. **S K Wahi**, D Gupta, S Santapuri. "Finite element analysis and design of a magnetostrictive material based vibration energy harvester with a magnetic flux path. **Smart Materials and Structures**, (2024): 33(11), 115038.." DOI: 10.1088/1361-665X/ad8408

Patent

1. **S K Wahi**, and S Santapuri. "Design of an efficient magnetostrictive material based vibration energy harvester with a modified flux path." **Indian Patent Granted.** Date of grant: 20/11/2025 Patent number: 574208

Book Chapter

1. Dinesh Yadav, Ekta, **Sajan Kumar Wahi**, and Sunil Kumar Sharma, Neha. "National Skill Qualification Framework in India." Book title Virtual Lifelong Learning: Educating Society with Modern Communication Technologies, June 2024, Bentham Science Publishers, ISBN: 9789815196573
   DOI: https://doi.org/10.2174/9789815196566124010l

Conference Paper/Presentation/Poster/Workshop/Invited Talk

1. Invited Talk: Modeling and Analysis of Magnetostrictive Material based Structures, 5th November 2025 in a Modeling and Simulation Eureka Workshop 2025, SLB, Coimbatore

2. Invited Talk: Energy Harvesting from Ambient Waste Energy: A study on constitutive modeling using MATLAB and FEA simulations, 27 August 2025, NSUT, New Delhi, in a Short Term Course on MATLAB-Powered for Smart Cities-2025

3. M Kumar, **S K Wahi**, S Santapuri, "Modeling and Analysis of Magnetostrictive Material based Structures" poster presentation at open house, IIT, Delhi, 2018. **(Poster Presentation)**

4. M Kumar, **S K Wahi**, S Santapuri, "Modeling and Analysis of Magnetostrictive Material based Structures", **Proceedings of COMSOL Conference**, 9-10 August 2018, Bangalore, India.
   DOI: https://www.comsol.co.in/paper/modeling-and-analysis-of-magnetostrictive-material-based-structures-61511 **(Conference Paper)**

5. **S K Wahi**, M Kumar, S Santapuri, "A computationally efficient energy averaged nonlinear constitutive model for magnetostrictive materials", **International Symposium on Integrated Functionalities**, 10-13 December 2017, Delhi, India. **(Presentation Talk)**

Teaching Experience

SVSU Haryana (Skill Assistant Professor) March 2022 – Present

- ME403: Applied Mechanics
- ME501L: Engineering Graphics and Drawing
- ME601L: CAD Lab
- ME503: Measurement and Metrology

IIT Delhi (Teaching Assistant) January 2017 – March 2022

- APL100: Engineering mechanics
- APL104: Solid mechanics
- APL831: Theory of plates and shells
- APL774: Modeling and analysis

Assistant Professor, Lovely Professional University, Punjab, India July 2015 – November 2015

- MEC201: Solid mechanics
- MEC228: Creo-2.0
- MEC220: Solid Mechanics Lab

Scholastic Honours, Awards and Certificates

- Research scholar **travel award** (RSTA) from IIT, Delhi for attending international conference (2020)
- Awarded **third position** in M.Tech. (Machine Design Engineering) NIT Kurukshetra (July, 2015)
- **Qualified** (**GATE**-2013) in Mechanical Engineering with 97.83 percentile, AIR 3597
- Awarded 29^{th} rank in State and **first position** in district Kurukshetra in class XII (May, 2009)

Referee services

- Conference papers of Virtual Seminar on Applied Mechanics (VSAM)
- Smart Materials and Structures
- Archives of Electrical Engineering

References

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