Biographical sketch of Rabindra Nath Hota

- **Date of Birth : 9th May 1975**
- **Designation : Associate Professor**
- **Department : Mechanical Engineering, IIT Dhanbad**

Academic Qualification

Ph.D. in Mechanical Engineering from Indian Institute of Science, Bangalore (2008).
Title of the PhD Thesis: **Acoustic Source Characterization of the Exhaust and Intake Systems of I.C. Engines**

Research Advisor: Prof. M L Munjal, Dept. of Mechanical Engineering, IISc Bangalore

Research Publications

International journal: 16, National journal: 2
International conference: 15, National conference: 3
Patents: 5

Courses Taught in IIT (ISM):

• Engineering Mechanics (UG)
• Dynamics of Machinery (UG)
• Mechanical Vibration (PG)
• Acoustics and Noise Control (PG)

Externally Funded Project:

S.N	Project Title	Amount in Rs (Lakh)	Role (PI/CO-PI)	Funding Agency	Sanctioned Date	Status
1	DESIGN AND FABRICATION OF AN EXPERIMENTAL FACILITY FOR MEASUREMENT OF ACOUSTIC IMPEDANCE AFTERBURNER SCREECH LINER	100	PI	GTRE (DRDO)	2015-10-31	Completed
2	CONTROL OF SPRAYS AND THERMO-ACOUSTIC OSCILLATIONS THROUGH AN ACOUSTIC DRIVEN FUEL INJECTOR: PASSIVE AND ACTIVE CONTROL STRATEGY	152	PI	SUPRA (DST)	2021-03-12	Ongoing
3	ON THE REDUCTIONS OF AEROFOIL-TURBULENCE NOISE BY WAVY EDGES	33	CO-PI	DST	2016-09-21	Completed

Outreach Activities:

S.N	Project Title	Amount in Rs (Lakh)	Role (CI/Co CI)	No. of Co-CIs	Funding Agency	Duration	Status
1	VIBRATION ACOUSTICS AND CONTROL IN INDUSTRIAL APPLICATIONS (EDP/7218/2023-24)	1.6	CI	1	CLOUD FUNDING (PDP)	4 DAYS	Completed
2	NOISE CONTROL ENGINEERING METHODOLOGIES (EDP/7230/2023-24)	0.84	CI	0	CLOUD FUNDING (PDP)	3 DAYS	Completed

Consultancy

S.N	Project Title	Amount in Rs (Lakh)	Role (PI/CO-PI)	No. of CO-PIs	Funding Agency	Sanctioned Date	Status (Comple
1	PERFORMANCE ANALYSIS OF A LAB-SCALE POWER HYDRAULIC SYSTEM IN VARIOUS OPERATING CONDITION	4.13	CO-PI	2	SCHNEIDER ELECTRIC	2024-09-10	2024-10-31

Work Experience (20 years)

- One year industrial experience after BE, in the field of steam turbines, KESSELS Engg. Works Pvt. Ltd., Delhi (1997-98).
- One year industrial experience after Masters, in a software industry (CAD), Geometric Software Solution Co. Ltd., Mumbai (2001-2002).
- One and half year research experience with SID (in IISc, Bangalore), in Advanced Silencers project of Tata Motors Ltd (2006-2007).
- One year research experience with Facility of Research in Technical Acoustics (FRITA), through Dept. of Science and Technology, Govt. of India (2007-2008).
- 5 years working experience as Vibro-acoustics Team Lead, in Honeywell, Bangalore (2008-2013). Honeywell deals with Aerospace, Transportation systems etc. I was responsible for developing a vibro-acoustic lab and fixing various turbocharger related noise issues at customer end.
- Presently with IIT(ISM), Dhanbad, in the department of Mechanical Engineering since July 2013 as associate professor.

Lab and Research related activities

- Established a state of the art lab while in Honeywell in order to test vibro-acoustic aspect of turbochargers built by the company. (Approx. Rs 2 Crore)
- Turbo compressor sometime generates a tonal noise called the pulsation noise while in operation. I was involved in the design of pulsation damper to attenuate such pulsation noise of turbo compressor for few applications such as AUDI, VolksWagen etc. A mathematical formulation was developed using 1D acoustic to predict Transmission Loss (TL) of acoustic damper.
- A test set up was designed, fabricated and then commissioned in Honeywell in order to find out Transmission Loss (TL) of such pulsation damper.
- Built two modern labs in the department of Mechanical Engineering IIT(ISM) Dhanbad. One from GTRE (DRDO) fund (Rs 1 Crore, in the year 2017) and another from SUPRA (DST) fund (1.52 Crore, in the year 2023).

List of publications:

Journals

- Ashutosh Tripathi, N. K. Jha, R. N. Hota, Parametric Acoustic Characterization of Perforated Liners Backed by Cavity of Uniform and Varying Cross-sections. **Journal of Vibration Engineering and Technology**, Vol. 12, pp. 1659–1672 (2024).

- Baij Nath Singh, Vinayak Ranjan and R.N. Hota, Vibroacoustic response of thin power law indexed functionally graded plates, **Steel and Composite** Structures, Vol. 50, No. 3, 2024, pages 299-318.

- Baij Nath Singh, Vinayak Ranjan, and R. N. Hota "Vibroacoustic response of mode localized thin functionally graded plates using physical neutral surface." **Composite Structures**, 287 (2022), 115301.

- Baij Nath Singh, R. N. Hota, Sarvagya Dwivedi, Ratneshwar Jha, Vinayak Ranjan "Acoustic response of sigmoid

functionally graded thin plates - a parametric investigation", **Journal of Vibration Engineering and Technologies**, 10, 2509–2529 (2022).

- Baij Nath Singh, Vinayak Ranjan, R. N. Hota. "Vibroacoustic response from thin exponential functionally graded plates." **Archives of Applied Mechanics**, 92, pages 2095–2118 (2022).

- Baij Nath Singh, R. N. Hota, Sarvagya Dwivedi, Ratneshwar Jha, Vinayak Ranjan, and Kamil Řehák. (2022). "Analytical Investigation of Sound Radiation from Functionally Graded Thin Plates Based on Elemental Radiator Approach and Physical Neutral Surface" **Applied Sciences**, 12, no. 15: 7707. (2022).

- A. Tripathi, N. K. Jha, and R. N. Hota, "A Generalized Compliance Model for Study of Acoustic Damping Behavior of Mixed Porosity Segmented Perforated Liner," **Applied Acoustics**., vol. 183, 108302, 2021.
- U. Chhibber and R. N. Hota, "Effect of mean flow on shape correction factor and acoustic properties of a compact acoustic filter," **Applied Acoustics**, vol. 165, p. 107314, 2020.
- N. K. Jha, D. Das, A. Tripathi, and R. N. Hota, "Acoustic damping : Analytical prediction with experimental validation of mixed porosity liners and analytical investigation of conical liners," **Applied Acoustics**., vol. 150, pp. 179–189, 2019.

- U. Chhibber, R. Kumar, S. Haldar, and R. N. Hota, "Design and analysis of a compact acoustic filter for broadband noise absorption," **Applied Acoustics**, vol. 140, no. February, pp. 30–38, 2018.

- Ashutosh Tripathi, **N. K. Jha**, Ajay Kumar, Rashi Tyagi, R. N. Hota, "Green sound absorbing material prepared by using natural fiber for building acoustics", **Proceedings of the Institution of Mechanical Engineers Part E**-Journal of Process Mechanical Engineering, 2024.

- Sunali, U. Chhibber, R.N. Hota, "Effect of variation of extended length on end Correction in Extended Tube Resonators," International Journal of Pure and Applied Maths, Volume 119 No. 10 2018, 1957- 1966, (2017).

- N. K. Jha, Swapna Singh, R. N. Hota, A Simplified Two Load Transfer Matrix Approach for the Characterization of Acoustic Elements with and Without Mean Flow, Journal of Acoustical Society of India, vol. 46, No. 3-4, 2019, pp 98-112.

- R. N. Hota and M. L. Munjal, "A New Hybrid Approach for Thermo-Acoustic Modeling of Engine Exhaust System", International Journal of Acoustics and Vibration, 9(3), 129-138, 2004.

- R. N. Hota and M. L. Munjal, "Aero-acoustic Source Characteristics of a Compression Ignition Engine: Empirical Expressions Obtained by Means of a Numerical Multi-Load Method", International Journal of Aeroacoustics, **7** (2), 2008.

- R. N. Hota and M. L. Munjal, "Intake Source Characterization of a Compression Ignition Engine: Empirical Expressions", Noise Control Engineering Journal, 55(2), 2008.

- R. N. Hota and M. L. Munjal, "Computation of the Exhaust and Intake Noise of an Automotive Engine With or Without a Muffler Using Hybrid Approach and the Two-Load Method", Journal of Acoustical Society of India.

- Adil Kureshee, N. K. Jha Vikram Singh, R. N. Hota, S. Narayanan, Deepak Kumar Mandal Effect of single and multiple acoustic frequencies on the atomization of a spray, Physics of Fluids, December 2024; 36 (12): 122102.

- N. K. Jha, Vikram, N. K. Sah, R. N. Hota, "Acoustic Damping Characterization of Conical Cavity Backed Conical Perforated Liners in the Presence of Grazing and Bias Flow", **Sadhana**, ***Accepted***