



# Mriganka Shekhar Chaki

## Curriculum Vitae

### Work Experience

- March 01, 2021–Present **IIT-K Institute Postdoctoral Fellow**, *Department of Mechanical Engineering, Indian Institute of Technology Kanpur (IIT-K)*, UP, India.  
Research Topic Vibro-Acoustic Study of Indian Musical Instruments  
Supervisor Prof. Anurag Gupta (Professor)
- Dec 01, 2020–Feb 28, 2021 **Project Scientist**, *Department of Mechanical Engineering, Indian Institute of Technology Kanpur (IIT-K)*, UP, India.  
Research Topic Vibro-Acoustic Study of Indian Musical Instruments  
Supervisor Prof. Anurag Gupta (Professor)
- Sep 01, 2020–Nov 30, 2020 **Senior Project Associate**, *Department of Mechanical Engineering, Indian Institute of Technology Kanpur (IIT-K)*, UP, India.  
Research Topic Vibro-Acoustic Study of Indian Musical Instruments  
Supervisor Prof. Anurag Gupta (Professor)

### Education

- 2015–2020 **Doctor of Philosophy (Ph.D.)**, *Department of Mathematics & Computing, Indian Institute of Technology (ISM) Dhanbad (IIT (ISM), Dhanbad)*, Jharkhand, India.  
PhD Final Defence Exam **December 19, 2020**  
Date of Award **January 15, 2021** (Result notification No. Exam/219905/Ex.Bd/2007-08 (Vol. 111) dated 15th January, 2021. Page 61 in [https://www.iitism.ac.in/~academics/assets/phd\\_awarded/PHD.pdf](https://www.iitism.ac.in/~academics/assets/phd_awarded/PHD.pdf))  
Research Topic Study on Elastodynamic Problems on Microcontinuum and Electro-elastic Layered Structures with Non-Conventional Boundaries  
Supervisor Dr. Abhishek Kumar Singh (Associate Professor)
- 2013–2015 **Masters of Science (M.Sc.)**, *Indian School of Mines, Dhanbad, Jharkhand, India*, CGPA – 9.45.  
**First Class with Distinction in Mathematics and Computing.**  
Master's Dissertation under Prof. Gauri Shanker Seth
- 2010–2013 **Bachelor of Science (B.Sc.)**, *St. Xavier's College, University of Calcutta, Kolkata, West Bengal, India*, CGPA – 6.1.  
**Honours in Mathematics**

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## Research interest

Elastic Wave Propagation, Acoustic Vibration, Micro-continuum Mechanics, Piezoelectric Smart Structures, Analytical Methods, Numerical methods

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## Research Publication

- 2021 **Chaki, M. S.** and Singh, A. K., Scattering and propagation characteristics of SH wave in reduced Cosserat isotropic layered structure at irregular boundaries. *Mathematical Methods in the Applied Sciences*, 44(7), 6143-6163, DOI: <https://doi.org/10.1002/mma.7176> (Impact Factor: 1.626)
- 2020 **Chaki, M. S.**, Eremeyev, V. A. and Singh, A. K., Surface and interfacial anti-plane waves in micropolar solids with surface energy. *Mathematics and Mechanics of Solids*, DOI: <https://doi.org/10.1177/1081286520965646> (Impact Factor: 2.040)
- 2020 **Chaki, M. S.** and Singh, A. K., Anti-Plane Wave in a Piezoelectric Viscoelastic Composite Medium: A Semi-Analytical Finite Element Approach using PML. *International Journal of Applied Mechanics*, 12(2), 2050020. DOI: <https://doi.org/10.1142/S1758825120500209> (Impact Factor: 2.449)
- 2019 **Chaki, M. S.** and Singh, A. K., The impact of reinforcement and piezoelectricity on SH wave propagation in irregular imperfectly-bonded layered FGPM structures: An analytical approach. *European Journal of Mechanics-A/Solids*, 80, 103872. DOI: <https://doi.org/10.1016/j.euromechsol.2019.103872> (Impact Factor: 3.786)
- 2019 Verma, A.K., Chattopadhyay, A., **Chaki, M.S.** and Singh, A.K., Rayleigh-type wave propagation on a transversely isotropic viscoelastic layer with yielding and rigid foundations. *Mechanics of Advanced Materials and Structures*, 26(2), 107-118. DOI: <https://doi.org/10.1080/15376494.2017.1365978> (Impact Factor: 3.517)
- 2018 Singh, A. K., **Chaki, M.S.** and Chattopadhyay, A., Remarks on impact of irregularity on SH-type wave propagation in micropolar elastic composite structure. *International Journal of Mechanical Sciences*, 135, 325-341. DOI: <https://doi.org/10.1016/j.ijmecsci.2017.11.032> (Impact Factor: 4.631)
- 2018 Chattopadhyay, A., Verma, A.K., **Chaki, M.S.** and Singh, A.K., Influence of Rigid, Stress-Free and Yielding Base of a Composite Structure on the Propagation of Rayleigh-Type Wave: A Comparative Approach. *Journal of Mechanics*, 34(6), 733-748. DOI: <https://doi.org/10.1017/jmech.2017.65> (Impact factor: 1.293)
- 2017 Singh, A.K., **Chaki, M.S.**, Hazra, B. and Mahto, S., Influence of imperfectly bonded piezoelectric layer with irregularity on propagation of Love-type wave in a reinforced composite structure. *Structural Engineering and Mechanics*, 62(3), 325-344. DOI: 10.12989/sem.2017.62.3.325 <http://www.techno-press.org/content/?page=article&journal=sem&volume=62&num=3&ordernum=8> (Impact factor: 2.984)
- 2016 Kaur, T., Sharma, S.K., Singh, A.K. and **Chaki, M.S.**, Moving load response on the stresses produced in an irregular microstretch substrate. *Structural Engineering and Mechanics*, 60(2), 175-191. DOI: 10.12989/sem.2016.60.2.175 <http://www.techno-press.org/content/?page=article&journal=sem&volume=60&num=2&ordernum=1> (Impact factor: 2.984)

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## Contributed Book Chapter

- 2020 **Chaki, M.S.** and Singh, A. K., Anti-Plane Shear Wave in Microstructural Media: A Case Wise Study of Micropolarity, Irregular, and Non-Perfect Interface. *In Handbook of Research on Recent Developments in Electrical and Mechanical Engineering* (pp. 376-411). IGI Global. <https://www.igi-global.com/chapter/anti-plane-shear-wave-in-microstructural-media/237092>

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- 2020 **Chaki, M.S.**, Guha, S. and Singh, A. K., Impact of Rectangular/Parabolic Shaped Irregularity on the Propagation of Shear Horizontal Wave in a Slightly Compressible Layered Structure. In: *Manna S., Datta B., Ahmad S. (eds) Mathematical Modelling and Scientific Computing with Applications. ICMMSC 2018. Springer Proceedings in Mathematics & Statistics, vol 308* (pp. 61-74). Springer, Singapore. [https://link.springer.com/chapter/10.1007/978-981-15-1338-1\\_5](https://link.springer.com/chapter/10.1007/978-981-15-1338-1_5)

## Reviewer of Journals

**Mechanics of Advanced Materials and Structures.**

**Multidiscipline Modeling in Materials and Structures.**

**Science Progress.**

**Waves in Random and Complex Media.**

## Workshops and Conferences

- January 03-07, 2020 Attended **Indian Science Congress 2020** held at *University of Agricultural Sciences, GKVK campus, Bangalore, India* to present a poster on **Analytical study of shear wave propagation in a reduced Cosserat layered structure with abrupt thickening** and received **Best Poster Award** in Mathematical Sciences (including Statistics) section from **Vice-President of India Shri M V Naidu**
- December 09-12, 2019 Attended **64th Congress of Indian Society of Theoretical and Applied Mechanics (ISTAM-2019)** organized by *Indian Institute of Technology Bhubaneswar* at Indian Institute of Technology Bhubaneswar, Bhubaneswar, India and presented a paper entitled **Anti-plane waves in piezoelectric materials with surface elasticity**
- September 17-21, 2019 Attended **The 2019 World Congress on Advances in Structural Engineering and Mechanics (ASEM19)** organized by *IASEM, KAIST, KACM and KTA* at ICC Jeju, Jeju Island, South Korea and presented a paper entitled **A study on SH wave propagation in FGPM layered structure due to abrupt thickening and imperfect bonding at the interface in Smart Structures and Systems(ICSSS) 2019**
- July 02-06, 2018 Attended **10th European Solid Mechanics Conference** organized by *University of Bologna and University of Trento* at Palazzo Dei Congressi, Bologna, Italy and presented a paper entitled **A study on Love-type wave and new type of dispersive wave propagation in irregular/imperfectly bonded micropolar layer over half-space**
- December 27-29, 2017 Attended **International Conference on Composite Materials and Structures** organized by *Indian Institute of Technology Hyderabad* at Hyderabad International Convention Centre (HICC) , Hyderabad, India and presented a paper entitled **Dynamic response of an irregular microstretch substrate subject to a moving load**
- June 8-10, 2017 Attended **International Conference on Recent Advances in PDEs: Theory, Computations and Applications** organized by the *Department of Applied Mathematics, Indian Institute of Technology Bombay, India* and presented a paper entitled **Propagation of Love-type wave in an imperfectly bonded piezoelectric layer with irregularity**
- July 18-29, 2016 Attended workshop on **Non-linear Continuum Mechanics** under Global Initiative of Academic Networks (GIAN) course at *Indian Institute of Technology Madras, Chennai, India*
- December 21-23, 2015 Attended **7<sup>th</sup> National Conference on Wave mechanics and Vibrations** co-organized by the *Von Karman Society, Jalpaiguri, India* and *Indian School of Mines, Dhanbad, Jharkhand, India*

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## Awards

- 03-07 January, 2020 Received **National Award (Best poster award)** in Mathematical Sciences (including Statistics) section from **Vice-President of India Shri M V Naidu** in **Indian Science Congress 2020** held at *University of Agricultural Sciences, GKVK campus, Bangalore, India*
- 02-06 July, 2018 Awarded financial assistance for **10th European Solid Mechanics Conference at Bologna, Italy** by *International Travel Support (ITS) Scheme under Science and Engineering Research Board (SERB)*
- 2015 Qualified **Graduate Aptitude Test in Engineering (GATE)** in Mathematics (MA) organized by *Indian Institute of Technology, Kanpur, India (All India Rank-311, GATE Score-478)*
- 2013-2015 Awarded **Innovation in Science Pursuit for Inspired Research (INSPIRE) Fellowship** under **Scholarship for Higher Education (SHE) Program** by *Department of Science & Technology, Government of India* during MSc
- 2010-2013 Awarded **Innovation in Science Pursuit for Inspired Research (INSPIRE) Fellowship** under **Scholarship for Higher Education (SHE) Program** by *Department of Science & Technology, Government of India* during BSc

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## Technical skills

MATHEMATICA, MATLAB,  $\text{\LaTeX}$ , ABAQUS, COMSOL MULTIPHYSICS, C/C++, MYSQL, MS WORD, MS POWERPOINT, MS EXCEL

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## Languages

**English, Hindi, Bengali**, (Mother tongue).

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## Personal Information

- Gender Male
- Date of Birth September 05, 1991
- Marital Status Married
- Current Address *FB367, Faculty Building, Department of Mechanical Engineering, Indian Institute of Technology Kanpur (IIT-K), Pin-208016, Uttar Pradesh, India*
- Permanent Address *0052, Manasi Villa, Vidyasagar Pally, PO- Jhaljhalia, PS- English Bazar, Dist-Malda, Pin- 732102, West Bengal, India*
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