

# ANUSREE RAY

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Structures Office I, Department of Aerospace Engineering  
Indian Institute of Science, Bangalore, 560012

## RESEARCH INTERESTS

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- Wave Physics
- Metamaterials
- Phase Transitions
- Solid Mechanics
- Microcontinuum Structures
- Piezoelectric Materials

## EDUCATION

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### Ph.D. in Applied Mathematics

Indian Institute of Technology, (Indian School of Mines), Dhanbad

*Aug 2016 - Jan 2022*

### M.Sc. in Mathematics and Computing

Indian Institute of Technology, (Indian School of Mines), Dhanbad

*July 2014- May 2016*

*OGPA: 9.63/10*

### B.Sc. in Mathematics (Honours)

Bethune College, University of Calcutta Kolkata

*Aug 2011- July 2014*

*72.12%*

### Higher Secondary

Indian School Certificate

*Apr 2010 - Mar 2011*

*89.25%*

### Secondary

Indian Certificate of Secondary Education

*Apr 2008 - Mar 2009*

*89.4%*

## EXPERIENCE

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### Institute of Eminence Postdoctoral Fellow

Department of Aerospace Engineering, Indian Institute of Science, Bengaluru

*Jun 2022- Jun 2024*

## PH.D. THESIS

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Wave characteristics in Piezoelectric, Piezomagnetic and Microcontinuum Structures with Boundary Peculiarities

## MASTERS THESIS

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Influence of Corrugated Boundary Surfaces, Reinforcement, Hydrostatic Stress, Heterogeneity and Anisotropy on Love-Type Wave Propagation: A Review

## PROFESSIONAL SOCIETY MEMBERSHIPS

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- APS: American Physical Society (2023 – )

- Life Member of Indian Science Congress
- Life Member of Indian Mathematical Society
- Life Member of Society of Applied Mathematics, IIT (ISM), Dhanbad

## CONFERENCE PRESENTATIONS

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- “Collision of Topological Solitons in Magnetoelastic lattice”, *European Nonlinear Dynamics Conference*, TU Delft, the Netherlands, July 22-26, 2024.
- “Transition waves in Tristable Magnetoelastic Lattice”, *American Physical Society March Meeting 2024*, Minneapolis, MN, March 3-8, 2024.
- “A Green’s function approach to analyse the dispersion characteristics of Love-type wave due to an impulsive point source in a piezoelectric layered structure”, *International Conference On Mathematical Modelling and Scientific Computing*, IIT Indore, June 19-21, 2018.
- “On the possibility of Rayleigh-type wave propagation through a liquid layer overlying a porous/heterogeneous half-space with corrugated interface”, *International Conference on Composite Materials and Structures*, Hyderabad, December 27-29, 2017.
- “Influence of corrugated interface and poroelasticity on Rayleigh-type wave propagation”, *International Conference on Recent Advances in PDEs: Theory, Computations and Applications*, IIT Bombay, Mumbai June 8-10, 2017.

## WORKSHOPS ATTENDED

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- “GIAN course on Multi-Scale Modeling of Advanced Materials”, *MNIT, Jaipur*, June 16 -29, 2019.
- “GIAN course on Multiscale Modelling of Heterogeneous Structures”, *Jayachama-Rajendra College of Engineering*, JSS Technical Institution Campus, Mysuru, June 4-16, 2018.
- “National Workshop on Computational Mathematics”, (NWCM-2017)-Phase-I, Department of Mathematics, *Anna University*, Chennai, March 2-8, 2017.

## RESEARCH PUBLICATIONS

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1. **Ray, A.**, Anand, S., Dabade, V. and Chaunsali, R. (2024) Remote Nucleation and Stationary Domain Walls via Transition Waves in Tristable Magnetoelastic Lattices <http://arxiv.org/abs/2405.01168>( *Under Review*)
2. **Ray, A.** and Singh, A. K., (2023). Perfectly matched layer and infinite element coupled with finite elements for SH waves in an imperfect piezoelectric viscoelastic structure, *European Journal of Mechanics - A/Solids*, <https://doi.org/10.1016/j.euromechsol.2022.104863>
3. **Ray, A.** and Singh, A. K., (2021). Electromechanical coupling and mass loading sensitivity of SH waves in a dielectrically imperfect piezoelectric structure, *International Journal of Solids and Structures*, <https://doi.org/10.1016/j.ijsolstr.2020.10.025>
4. **Ray, A.** and Singh, A. K., (2021). Impact of imperfect corrugated interface in piezoelectric-piezomagnetic composites on reflection and refraction of plane waves, *The Journal of the Acoustical Society of America*, <https://doi.org/10.1121/10.0005544>
5. Singh, A. K., **Ray, A.**, and Kumari, R. (2021). A new dispersive wave with Love-type waves in a microstructure due to an impulsive point source. *Waves in Random and Complex Media*, <https://doi.org/10.1080/17455030.2021.1892238>
6. Kumari, R., Singh, A. K., and **Ray, A.** (2021). Love-type wave in low-velocity piezoelectric-viscoelastic stratum with mass loading, *Acta Mechanica*, <https://doi.org/10.1007/s00707-020-02831-3>
7. **Ray, A.** and Singh, A. K., (2020). Love-type waves in couple-stress stratum imperfectly bonded to an irregular viscous substrate. *Acta Mechanica*, <https://doi.org/10.1007/s00707-019-02525-5>
8. Singh, A. K., Singh, S., Kumari, R., and **Ray, A.** (2020). Impact of point source and mass loading sensitivity on the propagation of an SH wave in an imperfectly bonded FGPPM layered structure. *Acta Mechanica*, <https://doi.org/10.1007/s00707-020-02659-x>

9. **Ray, A.**, Singh, A. K., and Kumari, R. (2019). Green's function technique to model Love-type wave propagation due to an impulsive point source in a piezomagnetic layered structure, *Mechanics of Advanced Materials and Structures*, <https://doi.org/10.1080/15376494.2019.1597227>
10. Singh, A. K., **Ray, A.**, and Chattopadhyay, A. (2019). Analytical Study on Propagation of G-Type Waves in a Transversely Isotropic Substrate beneath a Stratum considering Couple Stress, *International Journal of Geomechanics*, [https://doi.org/10.1061/\(ASCE\)GM.1943-5622.0001454](https://doi.org/10.1061/(ASCE)GM.1943-5622.0001454)
11. Singh, A. K., Kumari, R., **Ray, A.**, and Chattopadhyay, A. (2019). Love-type waves in a piezoelectric-viscoelastic bimaterial composite structure due to an impulsive point source. *International Journal of Mechanical Sciences*, <https://doi.org/10.1016/j.ijmecsci.2019.01.019>
12. Singh, A. K., Koley, S., Negi, A., and **Ray, A.** (2019). On the dynamic behavior of a functionally graded viscoelastic-piezoelectric composite substrate subjected to a moving line load. *The European Physical Journal Plus*, <https://doi.org/10.1140/epjp/i2019-12444-2>
13. Singh, A. K., Das, A., **Ray, A.**, and Chattopadhyay, A. (2018). On point source influencing Love-type wave propagation in a functionally graded piezoelectric composite structure: A Green's function approach. *Journal of Intelligent Material Systems and Structures*, <https://doi.org/10.1177/1045389X18754351>
14. Singh, A. K., Das, A., and **Ray, A.** (2017). Rayleigh-type wave propagation through liquid layer over corrugated substrate. *Applied Mathematics and Mechanics*, <https://doi.org/10.1007/s10483-017-2205-8>

## BOOK CHAPTERS

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1. **Ray, A.** and Singh, A. K. (2020). A Green's Function Approach to Analyze the Dispersion Characteristics of Love Type Wave Due to an Impulsive Point Source in a Piezoelectric 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. Springer, Singapore. [https://doi.org/10.1007/978-981-15-1338-1\\_1](https://doi.org/10.1007/978-981-15-1338-1_1)

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