

Anusree Ray

Personal Details

Birth September 17, 1993

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Research Interests

Wave propagation, Metamaterials, Solid Mechanics, Piezoelectric Materials, Numerical Methods

Experience

June 2022 **IoE Postdoctoral Fellow**, *Department of Aerospace Engineering, Indian Institute of Science*,
-Present Bengaluru, India.

Education

Aug 2016 **Ph.D. in Applied Mathematics**, *Indian Institute of Technology, (Indian School of Mines)*,
-Jan 2022 Dhanbad, India.

2014-2016 **M.Sc. in Mathematics and Computing**, *Indian Institute of Technology, (Indian School of Mines)*, Dhanbad, India, **OGPA: 9.63/10**.

2011-2014 **B.Sc. in Mathematics (Honours)**, *Bethune College, University of Calcutta*, Kolkata, India, **72.12%**.

2011 **Higher Secondary**, *Pearls of God, Hindmotor, (Board: Indian School Certificate)*, Kolkata, India, **89.25%**.

2009 **Secondary**, *Pearls of God, Hindmotor (Board: Indian Certificate of Secondary Education)*, Kolkata, India, **89.4%**.

Ph.D. Thesis

Research Solid Mechanics, Wave Propagation, Piezoelectric Materials, Microcontinuum Structures, Finite
Field Element Methods

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

Masters Thesis

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

Research Publications

- 1 **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>
- 2 **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>
- 3 **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>
- 4 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>
- 5 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>
- 6 **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>
- 7 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>
- 8 **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>
- 9 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)
- 10 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>
- 11 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>
- 12 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>
- 13 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 Chapter

- 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. ICMMS 2018. Springer Proceedings in Mathematics & Statistics, vol 308. Springer, Singapore. https://doi.org/10.1007/978-981-15-1338-1_1

Conferences attended

- 1 **International Conference On Mathematical Modelling and Scientific Computing**, IIT Indore, June 19-21, 2018, and presented a paper entitled "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".
- 2 **International Conference on Composite Materials and Structures**, Hyderabad, December 27-29, 2017, presented a paper entitled "On the possibility of Rayleigh-type wave propagation through a liquid layer overlying a porous/heterogeneous half-space with corrugated interface".
- 3 **International Conference on Recent Advances in PDEs: Theory, Computations and Applications**, IIT Bombay, Mumbai June 8-10, 2017, and presented a paper entitled "Influence of corrugated interface and poroelasticity on Rayleigh-type wave propagation".

Workshops attended

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

Skills

C, C++, JAVA, R, MATLAB, MATHEMATICA

Extra-Curricular

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