

Education

- 2019- **Doctor of Philosophy**, *Engineering & Environment*, University of Southampton
 Sept 2022 (expected) Analytical and numerical investigations of wave propagation in random elastic structures and modal vibrations of periodic media.
 Doctoral Advisors: Prof. Atul Bhaskar, Dr. Neil Ferguson
- 2012-2017 **Master of Technology**, *Mechanical Engineering*, Indian Institute of Technology Kanpur
 Experimental and numerical investigation of the acoustics of a drum involving string membrane contact.
 Results published in *J. Acoust. Soc. Am.*
 Thesis Advisor: Prof. Anurag Gupta
- 2012-2017 **Bachelor of Technology**, *Mechanical Engineering*, Indian Institute of Technology Kanpur
 Minor: Control Systems Engineering.
 Coordinator of the Electronics Club

Work Experience

- 2019- **University of Southampton**, *Southampton*, UK
Marie Skłodowska-Curie Fellow
 (1) Demonstrated the existence of branched flows in elastic plates using analytical approaches (stochastic differential equations) and two numerical methods (ray simulations and finite element elastodynamics simulations). Results published in *(Nature) Communications Physics*. Manuscript extending this result to cylinders is under preparation.
 (2) Showed the existence of a Poisson ratio dependence on the persistence length of a ‘fold’ in thin elastic sheets. Using analytical and numerical approaches, we also uncovered the existence of critical Poisson ratio which determines the nature of the static response. Results published in *Extreme Mechanics Letters*.
 (3) Investigated the modal vibration properties of periodic structures arising in industrial contexts using analytical and computational approach. Manuscript under preparation.
- 2018-2019 **Boston Consulting Group**, *Gurgaon*, India
External Consultant (Associate)
 Worked on a profit turnaround case for a large steel manufacturer. Developed a Python based tool to analyze performance of one of the manufacturing plants. This tool was later deployed at the plant for use in maintenance planning and execution.
- 2017-2018 **New York University Tandon School of Engineering**, *Brooklyn*, USA
School of Engineering Fellow and graduate
 (1) Conducted research into enhancing actuation of ionic polymer metal composites. Results published in *Appl. Phys. Lett.*
 (2) Designed and fabricated electronic circuitry and enclosures for actuators based on macro-fiber composites for use in tactile stimulation.

Refereed Journal Publications

- 2022 **Jose, K.**, Ferguson N., and Bhaskar A. “Branching flows of flexural waves in non-uniform elastic plates” *(Nature) Communications Physics* 5: 152.
- 2021 Bhaskar A., and **Jose K.** “How far does a fold go?” *Extreme Mechanics Letters* 45: 101261.
- 2018 **Jose, K.**, Chatterjee, A., and Gupta, A. “Acoustics of idakkā: An Indian snare drum with definite pitch” *The Journal of the Acoustical Society of America* 143.5: 3184-3194.
- 2018 Boldini A.*, **Jose K.***, Cha Y., and Porfiri M. “Enhancing the deformation range of ionic polymer metal composites through electrostatic actuation” *Applied Physics Letters* 112.26: 261903 (*Co-first authors).

Under preparation

- Jose, K.**, Ferguson N., and Bhaskar A. “Chladni-like patterns in pillared plates” (*to be submitted to Scientific Reports*).
- Jose, K.**, Ferguson N., and Bhaskar A. “Branched flow of flexural waves in cylindrical tubes” (*to be submitted to Scientific Reports*).
- Jose, K.**, Ferguson N., Ibsen C., and Bhaskar A. “Computationally efficient models for modal vibration of tube-fin banks” (*to be submitted to Journal of Sound and Vibration*).

Conference Proceedings

- 2019 Boldini, A., **Jose K.**, Cha Y., and Porfiri M. "Electrostatic actuation in ionic polymer-metal composites." In *Nano-, Bio-, Info-Tech Sensors and 3D Systems III*, vol. 10969, p. 1096910. International Society for Optics and Photonics.

Awards, Fellowships & Scholastic Achievements

- 2019 **Marie Skłodowska-Curie Fellow ITN**, *University of Southampton*
- 2018 **Best PhD Qualifying Exam Performance**, *NYU Tandon School of Engineering*
- 2015 **Best Intern Award**, *Whirlpool Global Technology & Engineering Center, Pune*
- 2012 **IIT-Joint Entrance Exam All India Rank 792**
out of ~0.47 million candidates (99.8 percentile).
- 2012 **KVPY Fellowship**, *Government of India & Indian Institute of Science, Bangalore*
National fellowship for students interested in research careers. (Declined)

Research Talks (Selected)

- (Upcoming) **11th European Solid Mechanics Conference**, *NUI Galway*
Chladni-like patterns in pillared plates
- 2022 **Elasticity Day**, *University College London*
Branched flows of flexural waves in elastic plates and cylindrical shells
- 2022 **18th European Mechanics of Materials Conference**, *University of Oxford*
Analysis and computations for metamaterial with negative apparent coefficient of thermal expansion
- 2022 **ISVR Research Seminar**, *University of Southampton*
Acoustics of idakkā: a drum with "perfect pitch"
- 2021 **EUROMECH Colloquim 626**, *Keele University*, Online
Branched flow of flexural waves in random elastic plates
- 2021 **Elasticity Day**, *Isaac Newton Institute, University of Cambridge*, Online
Persistence behaviour of an elastic strip folded on its edge: the role of twist & Poisson's coupling (*with Prof. A. Bhaskar*)

Skills

- Computing MATLAB, Mathematica, Python, SLURM, Ansys APDL
- Softwares ANSYS Workbench, Autodesk Inventor
- Misc. Electronics, Rapid prototyping

Secondments & Internships

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| 2020-2021 | Vestas aircoil A/S , Lem, DK | <i>Visiting PhD student</i> |
| Oct-Nov '21 | Dinex A/S , Middelfart, DK | <i>Visiting PhD student</i> |
| May-Jul '16 | Singapore University of Technology & Design , Upper Changi, Singapore | <i>Visiting student</i> |
| May-Jul '15 | Whirlpool Global Technology & Engineering Center , Pune, India | <i>Summer intern</i> |

Professional Service

- Aug '20 **Reviewer** for *The European Physical Journal Plus* (Springer) *IF (2020) ~ 3.91*
- Sep '21 **Organizer** of the *InDEStruct Workshop* *~70 attendees.*

References

Available on request