

Gopikrishnan C. Remesan

Curriculum Vitae

"The true aim of every one who aspires to be a teacher should be, not to impart his own opinions, but to kindle minds."

Frederick W. Robertson

Career objectives

Research in applied mathematics.

Specialisation in mathematical biology with particular attention to tumour growth models.

Modelling, numerical simulation and theoretical analysis of biological problems.

Develop and optimise numerical algorithms to solve biological problems, with the focus on industrial applicability.

Partipate in human resource development by training and educating.

Education

Integrated BS - MS Dual Degree

2010 - 2012 **Bachelor of Science (Biology, Chemistry, Physics and Mathematics)**, *Indian Institute of Science Education and Research*, Thiruvananthapuram, India, CGPA - 8.65 (out of 10) up to 4th semester.

2012 - 2015 **Master of Science (Mathematics)**, *Indian Institute of Science Education and Research*, Thiruvananthapuram, India, CGPA - 8.58 (out of 10).

Doctor of Philosophy (ongoing)

2016 July - **Doctor of Philosophy (Mathematics)**, *IITB - Monash Research Academy*, Joint doctoral programme by Indian Institute of Technology Bombay India and Monash University Australia on the topic "*Numerical methods for free boundary problems in three dimensions with applications in biology.*".

Advisers Prof. Neela Nataraj (IIT Bombay), A/Prof. Jerome Droniou (Monash University), Dr. Jennifer A. Flegg (University of Melbourne)

Experience

01, June 2015 - 12, July 2016 **Visiting Lecturer**, *Bishop Chulapparambil Memorial College Kottayam*, Kerala, India.

Technical skill

Programming Language C, C++, Python

Softwares MATLAB, Mathematica, L^AT_EX, Paraview

IITB-Monash Research Academy – IIT Bombay – Maharashtra - 400076, India

☎ +91 9447682762 • ✉ gopikrishnan.chirappurathuresan@monash.edu

1/4

Operating Systems Linux, Microsoft

Research interests

Mathematical biology
Mutiphase flow problems
Elasticity problems

Partial differential equations
Numerical analysis

Teaching interests

Real analysis
Complex analysis
Ordinary and partial differential equations

Numerical analysis
Multivariable calculus

Teaching assistantships

- Calculus (IIT Bombay, B.Tech. first year)
- Numerical analysis (IIT Bombay, B.Tech. second year)
- Numerical analysis (IIT Bombay, M.Sc. first year)

Extra - curricular activities and achievements

- 2010 - 2015 **INSPIRE** (Innovation in Science Pursuit for Inspirational Research) Fellowship (Department of Science and Technology, Government of India), Registration Number - DST/INSPIRE-SHE/IISER-T/2008
- 2012 - 2015 **Institute Silver Medal**, For best academic performance and highest CGPA, School of Mathematics, IISER Thiruvnanthapuram.
- June 2015 **CSIR - JRF with NET**¹, All India Rank - 89
- December 2015 **CSIR - JRF with NET**, All India Rank - 43
- June 2016 **CSIR - JRF with NET**, All India Rank - 123
- January 2016 **GATE - Mathematics**², All India Rank - 103

Talks

- August 2015 Resource person for a talk on the topic 'Measure Theory - When observed from grounds' at St. Stephans College Kottayam, India
- June 2016 Guidance class on higher education in mathematics at Nuemann College Idukki, India.
- November 2017 Popular talk on mathematics on the topic 'Buffon's needle problem and what is so harmonic', IIT Bombay, India.
- October 2018 Postgraduate student talk on the topic 'Mathematics and medicine : the common 'M'', Monash University, Australia.
- November 2018 As a part of CTAC 2018 conference on the topic - 'Numerical solution of the two-phase tumour growth model with moving boundary (1 spatial dimensional study)', Newcastle, Australia.
- April 2019 Talk as a part of MCB lecture series on the topic 'Numerical solution of a two-phase tumour growth model with moving boundary (2 spatial dimensional study)', University of Melbourne, Australia.

IITB-Monash Research Academy - IIT Bombay - Maharashtra - 400076, India

☎ +91 9447682762 • ✉ gopikrishnan.chirappurathuremesan@monash.edu

2/4

- June 2019 Talk on ‘Numerical solution of a two-phase tumour growth model in two spatial dimensions’, MAFELAP 2019, Brunel University, London
- June 2019 Informal talk on ‘Numerical solution of a two-phase tumour growth models’, School of Mathematics, University of Oxford, London
- December 2019 Workshop on ‘Data visualisation using Matlab’, IIT Bombay (Research Scholars Forum), India
- December 2019 Talk on ‘Overdetermined systems of linear equations’, B. C. M. College, Kottayam, India

Publications

- [1] Electronic structure, lattice energies and Born exponents for alkali halides from first principles, Gopikrishnan C. R., and Jose, Deepthi and Datta, Ayan, *AIP Advances*, 2, 012131 (2012), DOI:<http://dx.doi.org/10.1063/1.3684608>
- [2] G. C. Remesan. Numerical solution of the two-phase tumour growth model with moving boundary, In *Proceedings of the 18th Biennial Computational Technique and Applications Conference, CTAC-2018*, volume 60 of ANZIAM J., pages C1-C15, 2019
- [3] J. Droniou, N. Nataraj and G. C. Remesan, Convergence analysis of a numerical scheme for a tumour growth model, *submitted to IMA Journal of Numerical Analysis*.
- [4] J. Droniou, J. A. Flegg and G. C. Remesan, Numerical solution of a higher spatial dimensional tumour growth model with moving boundary, *preprint*.

Projects

Master of Science

Title **A theoretical and numerical study of stochastic delay integro differential equations**

Advisor Dr. M. P. Rajan, Professor, School of Mathematics, IISER Thiruvananthapuram, India.

Master of Science (for minor degree in physics)

Title **Universal behavior of quantum discord as a function of measurement strength**

Advisor Dr. Anil Shaji, Associate Professor, School of Physics, IISER Thiruvananthapuram, India.

Workshops, Seminars and Conferences

- December 2013 Workshop - winter school in probability, Indian Statistical Institute Kolkata, India.
- August 2015 Refresher course for College teachers in Kerala (Topology), Kerala School of Mathematics, India.
- June 2017 Conference: Recent advances in PDE: theory, computations and applications, IIT Bombay, India.
- March 2018 Workshop: New directions in PDE constrained optimisation, IIT Bombay, India.
- November 2018 Conference: Computational Techniques and Applications Conference, Newcastle, Australia.

- Februday 2019 Workshop: Python for mathematics, Monash University, Australia.
- June 2019 Conference: Mathematics of Finite Elements and Applications - 2019, Brunnel University, London
- August 2019 Workshop: Hyperbolic conservation laws - Theory and Numerics, TIFR-CAM, Bangalore

Hobbies

Intrumental Music (Violin, proficient level)

Reading - Special interest in renaissance and post renaissance literature.

References

- **Prof. Neela Nataraj**
Professor
Department of Mathematics
Indian Institute of Technology Bombay
☎ +91 2576 7468
✉ neela@math.iitb.ac
- **A/Prof. Jerome Droniou**
Associate Professor
School of Mathematics
- **Dr. Jennifer Anne Flegg**
Seniur Lecturer
School of Mathematics and Statistics
University of Melbourne, Australia
☎ +61 3 8344 7523
✉ jennifer.flegg@unimelb.edu.au
- Monash University, Australia
☎ +61 3 9905 4489
✉ jerome.droniou@monash.edu

Notes

1. National level test conducted by the Council of Scientific and Industrial Research India (autonomous body under the ministry of human resource development) to screen post graduate for lectureship and doctoral research.
2. Graduate Aptitude Test in Engineering - conducted by the joint council of Indian Institute of Technologies and Indian Institute of Science Bangalore to screen students for post graduate education and doctoral research.