

Joel Sleeba

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About Me

I am a 2nd year masters student in mathematics at the Indian Institute of Science Education and Research, Thiruvananthapuram and I am doing my master's project on **Fourier analysis** under the guidance of Dr. P Devaraj. I am broadly interested in **Harmonic Analysis and Operator Theory**. I am also passionate about open source software and a proud Linux user.

Education

2021–present **M.Sc Mathematics**, *IISER Thiruvananthapuram*, CGPA: 8.06

- **Relevant courses:** Functional Analysis, Measure Theory, Topology, Abstract Algebra, Analysis on Manifolds, Finite Frames, Representation Theory
- **Readings**
 - *Functional Analysis: A First Course*, S. Kumaresan and D. Sukumar
 - *Measure, Integration and Real Analysis*, Sheldon Axler
 - *Topology*, James Munkres
 - *Abstract Algebra*, David S. Dummit, Richard M. Foote
 - *Analysis on Manifolds*, James Munkres
 - *Finite Frames*, Peter G. Casazza, Gitta Kutyniok
 - *Complex Analysis*, Elias M. Stein, Rami Shakarchi

2018–2021 **B.Sc Mathematics**, *Madras Christian College*, Chennai, GPA: 8.03

- **Relevant courses:** Real Analysis, Algebra, Linear Algebra, Number Theory, Discrete Mathematics
- **Readings**
 - *Understanding Analysis*, Stephen Abbott
 - *Topics in Algebra*, I. N. Herstein
 - *Linear Algebra Done Right*, Sheldon Axler
 - *Elementary Number Theory*, David M. Burton

Master's Thesis

Title *To be determined*

Supervisor Dr. P Devaraj

Description

- **Current reading:** Classical Paley Wiener theorems from Chapter 19, Holomorphic Fourier Transforms of *Real and Complex Analysis* by Walter Rudin
- **Previous reading:** Fourier series on a circle and Fourier transforms from *Early Fourier Analysis* by Hugh L. Montgomery

Summer Schools

- 2021 April – **Mathematics Training and Talent Search, Online**
2021 May Participated in level 1 of the national annual summer camp hosted by MTTS trust.
Topics
 - *Foundations*, S. Kumaresan
 - *Algebra*, Krishna Hanumanthu
 - *Analysis*, G. Santhanam
 - *Topology*, Pratulnanda Das
- 2020 May – **Mathematics Training and Talent Search, Online**
2020 June Participated in level 0 of the national annual summer camp hosted by MTTS trust.
Topics
 - *Foundations*, S. Kumaresan
 - *Algebra*, H. Ananthnarayan
 - *Analysis*, A. J. Jayanthan

Achievements

- 2021 **Rank 1**, *M.Sc mathematics entrance examination*, Pondicherry University
- 2021 **Rank 3**, *M.Sc mathematics entrance examination*, Hyderabad Central University

Skills

- Scripting **Python, Bash**
Python Libraries: Matplotlib, Scikit, Numpy
Bash: Task automation in Linux
- Programming **C, C++, Java**
C: Algorithms involving pointers and structures
C++, Java: Object Oriented Programming paradigm
- CAS **MATLAB, GNU Octave, Maxima, SageMath**
MATLAB, Maxima: Basics as part of Coursework.
GNU Octave, SageMath: Introductory knowledge
- Markup **LaTeX, Markdown, HTML**
- Languages **English, Malayalam, Tamil, Hindi**
Native proficiency in English and Malayalam. Elementary proficiency in Tamil and Hindi.

Additional Courses

- 2020 July – **CS101.2x: Object-Oriented Programming, IITBombayX**, MOOC, A+
2020 Dec *Instructors*: Prof. Deepak B Phatak, Prof. Supratik Chakraborty
Topics: Object Oriented Paradigm, Algorithms in OOP
- 2020 July – **CS101.1x: Programming Basics, IITBombayX**, MOOC, A+
2020 Dec *Instructors*: Prof. Deepak B Phatak, Prof. Supratik Chakraborty
Topics: Syntax and basic algorithms in C++

Teaching

- 2021 Sep – **Mentor, Online Foundation Course in Mathematics**, MTTS Trust
2021 Oct Cleared doubts and guided discussions for first and second year undergraduates.

Projects

- 2022 Sep – **Math Modelling**, *The International Genetically Engineered Machine competition (iGEM)*, IISER Thiruvananthapuram
2022 Nov Modelled vesicle internalization for a breast cancer drug delivery system. The model can be accessed [here](#).
- 2022 Sep – **Web Developement**, *The International Genetically Engineered Machine competition (iGEM)*, IISER Thiruvananthapuram
2022 Nov Developed the team webpage. The website can be accessed [here](#).
- 2021 **XOR encryptor**
January Developed a python script that can encrpyt any file or text using a key or password. The repository can be accessed from [here](#).
- 2020 May **CSSart**
Developed a series of websites using CSS and HTML. The website can be accessed [here](#).