



Joanan John Jacob

Master's student in Optoelectronics and Photonics
Paderborn University

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Objective

Motivated Master's student in Optoelectronics and Photonics with hands-on experience in optical and quantum simulations using C++ and Python. Eager to contribute to applied research in quantum computing, cognitive systems, and human-technology interaction at Fraunhofer IAO.

Education

M.Sc. in Optoelectronics and Photonics

2023 – Present

Paderborn University, Germany

Bachelor of Education (Physics)

Jul 2018 – Mar 2020

University of Kerala, India

Grade: 8.56 / 10

M.Sc. in Physics (Cosmology, Quantum Mechanics)

Jul 2014 – Apr 2016

Cochin University of Science and Technology, India

Grade: 8.51 / 10

B.Sc. in Physics

Jul 2011 – Apr 2014

University of Kerala, India

Experience

Research Assistant

Mar 2024 – Dec 2024

University of Paderborn, Germany

- Developed and optimized optical simulations using C++ and Python.
- Applied Fourier and Wavelet transforms on polarization and field data.
- Validated numerical models against theoretical predictions.

PG Physics Teacher

Jul 2020 – Mar 2022

Rajagiri Public School, Kochi, India

- Designed and implemented physics curriculum.
- Guided student science projects and organized webinars.

Projects

Semiconductor Bloch Equation Simulator

Simulated carrier and polarization dynamics under DC and optical fields. Implemented numerical solvers in C++ with post-processing in Python (STFT, CWT).

Higher Harmonic Generation Analysis

Used Fourier and Wavelet transforms to study nonlinear polarization response and validate harmonic content.

Gabor Transform Automation

Developed Python tools for comparative analysis of Gabor transforms for different simulation conditions.

Skills

Programming: C++, Python (NumPy, SciPy, Matplotlib), Bash, LaTeX

Simulation/Tools: Gnuplot, Git, RK4 Integration, STFT, Wavelet

Languages: English (C1), German (A2), Malayalam (native)

Personal Traits

Creative, responsible, team-oriented, quick learner, self-motivated

Interests

Painting, photography, music, drawing